Gross National Income Inventory (ESA 2010)

Reporting Year 2015

The Netherlands

Statistics Netherlands
Division of Economic and Business statistics and National accounts
National Accounts Department

GROSS NATIONAL INCOME INVENTORY

2015

The Netherlands

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CHAPTER 1 OVERVIEW OF THE SYSTEM OF ACCOUNTS

1.1 Introduction

1.1.1 Statistics Netherlands

Statistics Netherlands (CBS) is responsible for publishing of reliable and coherent statistical information which responds to the needs of Dutch society. The responsibility of SN is twofold: firstly, to compile (official) national statistics and secondly to compile European (community) statistics. The Statistics Netherlands Act[1] constitutes the legal basis for CBS. In addition, CBS has Regulations of the board[2].

The statistical programmes of Statistics Netherlands cover a multitude of societal topics, from macro-economic indicators such as economic growth and consumer prices, to the incomes of individuals and households. Statistics Netherlands' statistical programmes (the long-term statistical programme and the annual work programme) are set by the Director General. The Director General is also responsible for applied statistical methodology and the publication of statistical information. Statistics Netherlands aims to minimise its administrative burden on companies and the public. To this end CBS is granted access to existing administrative registrations of both government and government-funded organisations. These registers are accessible for official statistics free of charge. Where registers are not able to provide the required information, Statistics Netherlands is allowed to conduct supplementary business and household surveys. Companies are usually obliged by law to supply information to Statistics Netherlands and can be forced to cooperate under certain circumstances. Statistics Netherlands may use sanctions such as administrative fines. Statistics Netherlands is obliged to keep all individual data confidential. As an exception data sharing with Eurostat, NSIs in EU member states, Dutch Central Bank and academic researchers is allowed under certain conditions.

On 3 January 2004, Statistics Netherlands became an autonomous agency with legal personality. This implies there is no longer a hierarchical relationship between the Minister of Economic Affairs and the CBS organisation. However, the minister is still responsible for maintaining a system for the provision of governmental statistical information; in other words the minister is politically responsible for legislation and budget, for assuring the service of independent and publically available and high quality statistics. The costs of tasks and activities undertaken to put this legislation into practice are accountable to the government's budget. Since 1 January 2017, CBS has an Advisory Council[3]. As stipulated by the Statistics Netherlands Act, the Advisory Council's main task is to provide the Director General with solicited and unsolicited advice about the performance of his tasks and the exercise of his powers. When the position of Director General becomes vacant, another task of the Advisory Council is to make a recommendation to the Minister.

Statistical information published by Statistics Netherlands covers a wide variety of social and economic aspects. For this purpose, hundreds of surveys are conducted on annual, quarterly or monthly basis among enterprises, households, private and government bodies. Statistics Netherlands ensures the confidentiality of individual data.

[1] ANNEX 1.
[2] ANNEX 2.
[3] ANNEX 3.

Survey results provide a wealth of information on Dutch society. Statistical expertise backed up by scientific analysis ensures the adequacy and reliability of the information.

The organisation of Statistics Netherlands includes two statistical divisions:

- the "Division for Economic and Business Statistics and National Accounts" (EBN) is responsible for providing business, enterprise statistics and macro-economic statistics including the national accounts and the CPI;
- the "Division of Socio-economic and Spatial Statistics" (SER) is responsible for personal, household and regional statistics;

The Division EBN is divided into six departments, namely "Government finance and consumer price statistics", "Business Registers", "Business Statistics" (two departments: one in Heerlen and one in The Hague), "National Accounts" and a Staff Department.

The division, "Operational management, IT and Methodology takes care of statistical and IT support activities within Statistical Netherlands as well as software and methodological development and other supporting activities.

1.1.2 The National Accounts Department

The National Accounts Department is responsible for compiling integrated statistics which provide a coherent overview of socio-economic developments in the Dutch society at both macro and meso level. The core of the national accounts includes supply and use tables, institutional sector accounts (financial and current accounts) and labour accounts. The National Accounts Department relies on a large number of statistics compiled by other divisions of Statistics Netherlands and from other institutes such as the Dutch Central Bank, for the compilation of its statistical output.

The above mentioned three sub-systems, supply and use tables, institutional sector accounts and labour accounts are published quarterly and annually. The three sub-systems are fully consistent representing the elements one national accounting system. Maintaining this overall consistency is very resource demanding in terms of organisational skills and subject knowledge. About 100 fte highly educated and mostly experienced staff of Statistics Netherlands is involved in the compilation of the Dutch National Accounts. It should be mentioned that the National Accounts Department is also responsible for a range of supplementary macro- and socio-economic statistics such as environmental accounts, tourism accounts, sustainability monitor, regional accounts, sub-categorisations of the household sector, KLEMS-based growth accounts and (micro) productivity statistics, MIP Indicators and various statistics on the financial market and financial institutes.

Main users of the National Accounts are society at large, policy makers and scientists. The 'heavy users' in the Netherlands of national accounts statistics are the Bureau for Economic Policy Analysis, the Dutch Central Bank and the Ministries of Economic Affairs and Finance. Publications on e.g. quarterly economic growth and recent macro-economic developments receive broad public interest and media attention.

1.1.3 Supervisory and control systems for national accounts

General procedure

The general framework for quality management at SN is set by the Quality Guidelines (see annex 1.1). These guidelines are structured in accordance with the Object-oriented Quality and Risk Management model (OQRM: http://www.oqrm.org/English). This means that standards are set at three levels, i.e. object, one or more attributes of each object, and one or more requirements for each attribute. Objects are for example agreements, statistical output, and processes.

The Quality Guidelines contribute to:

- achievement of Statistics Netherlands' mission;
- achievement of Statistics Netherlands' core values: reliability, relevance, consistency and timeliness. Statistics Netherlands also takes due care with regard to privacy and confidentiality;
- conformity with legislation;
- the confidence of all stakeholders in Statistics Netherlands and its products;
- stakeholder satisfaction with the products of Statistics Netherlands;
- the image and reputation of Statistics Netherlands;
- the transparency of Statistics Netherlands.

Moreover, the Quality Guidelines:

- serve as input and explanatory notes for an audit framework;
- serve as input and explanatory notes in setting the self-assessment questions;
- provide a framework for statistical process redesign and amendment;
- ensure conformity with existing lower-level frameworks.

Standards in the Quality Guidelines are subdivided into three levels of importance. These levels are elaborated in Section 7.2 of the Quality Guidelines 2014. All standards that refer to the Code of Practice and the ESS QAF are at level 1 or 2.

Next to internal quality management also international assessments on quality of statistical procedures within SN are carried out. The International Monetary Fund (IMF) carried out a ROSC-mission to the Netherlands during 3-17 October 2007. In this mission the IMF made an assessment according to their Data Quality Assessment Framework (DQAF). The following five statistics were scrutinised during the mission: National Accounts; Consumer Price Index; Producer Price Index; Government Finance Statistics; Balance of Payments.

The results of this mission are published in the Report on the Observance of Standards and Codes (ROSC) – Data Module. This Report is accessible via the IMF-website:

http://www.imf.org/external/pubs/cat/longres.cfm?sk=21578.0

Self-assessment

All statistical processes are subject to self-assessment. Annual assessments are conducted for so-called critical processes and three-yearly assessments for all other processes. The self-assessment questionnaire is based on the Quality Guidelines. The purpose of the self-assessment is to identify points for improvement. Process owners are expected to compile action plans based on the results of the self-assessment. The self-assessment is based on the Quality Guidelines as mentioned before.

The total annual costs are equivalent to 0.5 of a full time equivalent.

ISO 9001

In 2015, Statistics Netherlands started with the implementation of a quality management system complying with ISO 9001:2015 in one of the departments. This department was certified in December 2015.

In 2018, ISO 9001 will be implemented for all processes of Statistics Netherlands. An ISO 9001 certificate for the whole organisation is expected in January 2019.

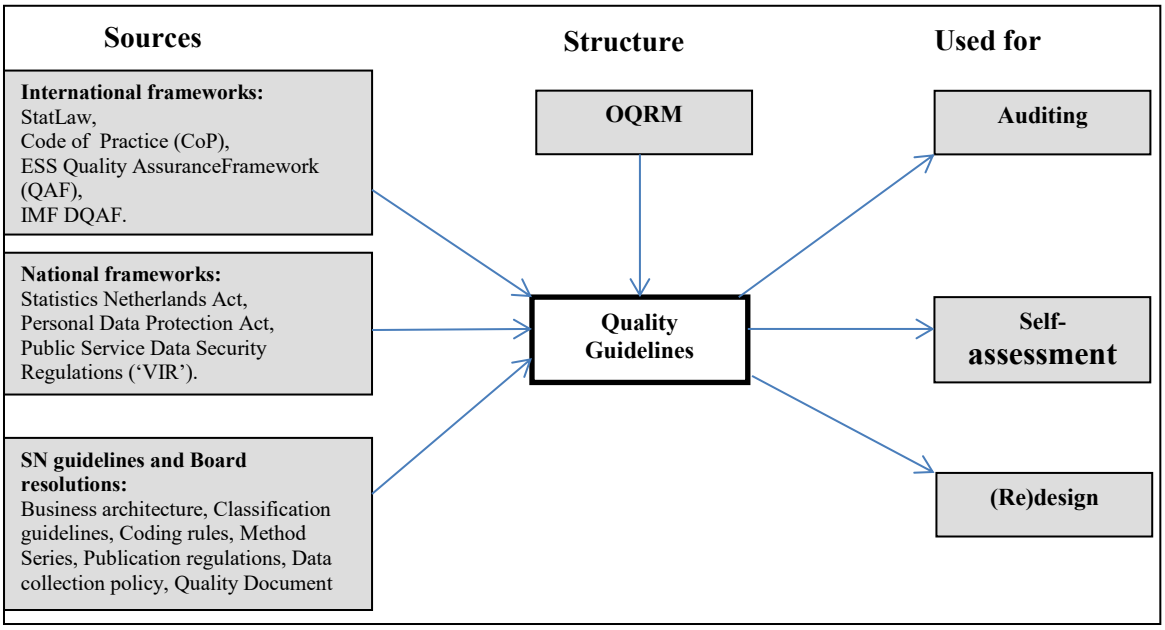
ISO 9001:2015 demands internal audits on the quality management system. These audits are performed according an annual audit program.

Process descriptions

Each statistical process maintains a Quality Document. As of 2014, this Quality Document consists of:

- a front page including an action plan to be signed by de process owner and department manager;
- a written and a graphical process description;
- an overview of the information systems used in the process;
- a documentation overview: titles and links
- agreements with data users and data suppliers;
- a completed self-assessment questionnaire.
- The Quality Document is regularly updated: annually for the 18 key statistics and three-yearly for all other statistics. The updates are centrally planned and monitored.

Figure 1.1 Relationship between sources, structure and goals of the Quality Guidelines



Quality assurance will guarantee the quality of statistical processes and in the end data quality. To this end a special unit within Statistics Netherlands is responsible for the coordination of the introduction of all quality assurance systems, inclusive The Regulation for the Security of Information of Central Government (VIR). The maintenance and updates of process documentation is the responsibility of the subject-matter departments.

The VIR creates an obligation to keep the descriptions of processes up-to-date. These descriptions provide insight in the structure of processes. Moreover, they indicate the constituent processes, their mutual relationships and who are the suppliers and who are the customers of these processes. Furthermore, service level agreements with suppliers and customers are being established, the input and the output of the subsequent processes are described, the owner of the process is identified, the structure of tasks, responsibilities and competences are established, the information systems supporting these processes are indicated, the final result of the process is described, the relationship to other processes is described and – on a higher level – the link of the process in the chain of activities is indicated.

The full description of processes creates awareness of (possible) risks and bottlenecks to which processes are exposed. This supports prevention of incidents. When incidents or calamities nevertheless occur, the VIR allows for proper and effective solutions to prevent these problems in future.

Each Department of Statistics Netherlands provides an annual work program which includes a risk paragraph. Risks are evaluated in quarterly progress reports. In this way entire management is informed about potential risks (statistical risks, personnel risks, ICT risks and so on) and can take the appropriate measures to minimise these risks.

Project management at Statistics Netherlands follows PRINCE 2 principles. Among other things, this means that Project Initiation Documents (PIDs will include a risk paragraph.

Lean Six Sigma

In 2014 Statistics Netherlands started with an institute wide program to implement Lean Six Sigma as the standard method for optimizing operational processes (see annex 1.2). The goal of introducing Lean Six Sigma at SN is enabling the organisation to carry out process improvement of operational processes in a structured manner and to build a culture of continuous improvement in which process optimization is obvious and routine. The program started with the introduction of the Lean Six Sigma project based approach with training of staff and performing improvement projects. Mid 2015 the program has been expanded with the introduction of Lean Operational Management. In the LOM approach complete teams are involved and improvement will become a part of the day's work for them, in contrast to the project approach where only project team members are involved.

Service Level Agreements

CBS internal data deliveries are subject to Service Level Agreements (SLAs) and Standard Service Levels (SSLs). The National Accounts Department maintains SLAs with all Departments of Statistics Netherlands responsible for providing source statistics. These SLAs include a description of the statistical products and services that are needed for National accounts purposes. The SLAs also define the timely delivery of good quality data and the delivery of meta data including quality reports (e.g. response rates, definitions, imputations, location and treatment of outliers).

Statistics Netherlands and the Dutch Central Bank work closely together and the cooperation between the two organisations is intensified in recent years. As a result the data exchanges between the two organisations are substantive and laid down in what is called the "Cooperation Agreements". This 70 pages annually updated document specifies all mutual data deliveries, calendars, contact persons etc.

Internal checking procedures

In the final stage of each quarter and year compilation cycle a quality control (a so-called check-recheck) meeting is held attended by internal, independent experts, not involved in the compilation process including the chief economist of Statistics Netherlands. The aim of these meetings are discussing the main results, informing colleagues about recent economic developments and formally approving the results. In preparing such meetings all compilers have to report on major events and summary reports of are sent to the Management Team of the National Accounts Department.

1.1.4 Cooperation Statistics Netherlands and the Central Bank

The institutional sector Accounts (current account, capital account, financial account and balance sheet) in the Netherlands are compiled by Statistics Netherlands, whereas the Balance of Payments and the International Investment Position (BOP/IIP) are compiled by the Central Bank (De Nederlandsche Bank, DNB). In 2014, The Dutch Central Bank and Statistics Netherlands made together the strategic decision to move toward a fully integrated compilation process for BOP/IIP statistics and Sector Accounts, which should result in fully consistent quarterly and annually published BOP/IIP and the rest-of-the-world account. These arrangements include the design of new joint reporting formats serving both BOP/IIP and national accounts needs, the development of a single revision policy, and the agreement on a clear division of tasks for the whole statistical process, from data collection to data dissemination.

Statistics Netherlands and DNB have achieved this full consistency between the rest-of-the-world account and the balance of payments in the benchmark revision of 2015. This result was possible thanks to the fact that the international manuals for these statistics have meanwhile been almost fully aligned in terms of their methodologies. CBS and DNB first published their statistics in accordance with these new manuals in 2014. Then, subsequently an intensive process was launched in which remaining discrepancies between the figures in the balance of payments and the sector accounts were examined and confirmed. To conclude the process, CBS and DNB compiled and fully aligned CBS's rest-of-the-world account and DNB's balance of payments according to a common statistical procedure.

In the presentation of the outcomes for the 2015 review year of the current account balance of the balance of payments and net external assets as produced together with the national accounts. Both figures are core indicators of external statistics, and they are among the indicators which the European Commission considers as part of its macroeconomic imbalances procedure (MIP).

1.1.5 Geographical coverage of the Netherlands

The delimitation of the Dutch economic territory and the designation of residents are in conformity with the definitions given in ESA 2010, sections 2.04 to 2.11 inclusive.

On 10 October 2010 the Netherlands Antilles ceased to exist. On that date the Islands Curaçao and St. Maarten became independent countries within the Kingdom of the Netherlands. The other islands of the former Netherlands Antilles, Bonaire, St. Eustatius and Saba, became special municipalities ("Openbare Lichamen") within the Netherlands.

So, in the reporting year 2010 the Kingdom of the Netherlands consisted of three parts until 10-10-10, namely:

- The Netherlands, that is the territory of the Kingdom in Europe;
- The Netherlands Antilles (Curaçao, Bonaire, part of the Island of St. Martin (St. Maarten), St. Eustatius and Saba);
- Aruba (separated from the Netherlands Antilles on 1 January 1986).

From 10-10-10 onward the Kingdom of the Netherlands consists of four parts:

- The Netherlands, that is the territory of the Kingdom in Europe plus Bonaire, St. Eustatius and Saba as special municipalities;
- Curaçao;
- St. Maarten;
- Aruba.

While a number of matters subject to the authority of the Kingdom, such as defence and foreign relations, are regulated jointly, the four parts enjoy complete autonomy with regard to other 'national' matters.

The Dutch economic territory does not encompass Aruba, Bonaire, Curaçao, St. Maarten, St. Eustatius and Saba, because:

- Under the protocol of 25 March 1957, the Treaty of Rome applies only to the Kingdom in Europe and Netherlands New Guinea;
- By a convention of 13 November 1962, the Netherlands Antilles were incorporated in Annex IV (associated countries and areas) of the Treaty of Rome;
- The European Community is based on a customs union (Article 9 of the Treaty of Rome); ESA 95, section 2.05, refers to the territory benefiting from the free movement of goods;
- Only that part of the territory of the Kingdom lying within Europe forms part of the Community customs area (Directive 2151/84/EC of 23 July 1984).

The above-mentioned is confirmed in Commission Regulation (EC) No 109/2005 of 24 January 2005 on the definition of the economic territory of Member States for the purpose of Council Regulation (EC, Euratom) No 1287/2003 on the harmonisation of gross national income at market prices. In this regulation is stated that the territory of the Netherlands encompasses 'the territory of the Kingdom of the Netherlands, with exception of the overseas countries and territories over which it exercises sovereignty, as defined in Annex II of the Treaty establishing the European Community'. In this Annex II Aruba and the Netherlands Antilles are stated.

There are no free trade areas within the Dutch territory. The value added in bonded warehouses, as a result, for instance, of storage and duty-free sales at airports, is included in GDP.

The Dutch section of the continental shelf is regarded as part of the economic area of the Netherlands. The extraction of oil and gas that takes place in this area is thus included in Dutch GDP. Inclusion in the statistics is based on the grant of an operating licence.

Territorial enclaves as defined in ESA 2010, section 2.05, relate in particular to Dutch embassies and some barrack areas in NATO partner countries or other countries. Extra-territorial enclaves as defined in ESA 2010, section 2.06, include foreign embassies and consulates and establishments of organisations such as the International Court of Justice, the Permanent Court of Arbitration, the Dutch Reactor Centre, ESTEC, EUROCONTROL, the Organisation for the Prohibition of Chemical Weapons, the International Criminal Court and the NATO.

The Netherlands does not have any deposits situated in international waters outside the Dutch part of the continental shelf that are exploited by resident units.

A point worth mentioning is that, in the province of Noord-Brabant, there are about 30 small Belgian areas that together form the municipality of Baarle-Hertog. These areas in turn enclose two small enclaves, which form part of the Dutch municipality of Baarle-Nassau.

1.2 The revisions policy and the timetable for revising and finalising the estimates; major revisions since the last version of the GNI Inventory

1.2.1 The revision policy

The national accounts provide a quantitative description of the economic developments over a given period in the Netherlands. The information required for the compilation of the national accounts is obtained from a great variety of sources which differ, in composition and quality, over time. Changes in data sources can lead to new insights with regard to level estimates and price and volume changes of variables. Because the information requirements of national accounts users also change in the course of time, it may be necessary to amend definitions, classifications and estimation methods.

A proper description of an economic phenomenon (actor, transaction) should satisfy two conditions:

- Up-to-date level estimates;
- Correct growth estimates (continuity principle).

Up-to-date levels refer to description of the economic process over a given period, applying the latest insights in definitions, statistical sources, etc. Continuity refers to comparability of the data over a sequence of periods, resulting in proper estimates of value, volume and price changes.

It is not (always) possible to meet both requirements simultaneously. In the Dutch national accounts priority is given to the continuity condition and ensuring that the data are comparable with those of a pre-determined base year, the year for which the latest benchmark revision was carried out. To this end, price and volume changes of product transactions between individual periods are estimated as accurately as possible. Level estimates are brought back to source statistics when conducting benchmark revisions. In this way the continuity requirement is met at all times. The continuity principle is particularly crucial within the supply-use framework and its main use for measuring economic growth (GDP growth in volume terms).

The up-to-date levels requirement is met by frequently conducting benchmark revisions when level estimates of national accounts variables are adjusted in line with the latest findings in the field of concepts, definitions, classifications, estimation methods and the like. The national accounts are revised periodically, however not too frequently in order not to distort the comparability of data over time too often. Limiting the occurrence of data gaps and disturbances in time series is much appreciated by the most important national accounts users in the Netherlands.

Over the last four decades benchmark revisions of the Dutch national accounts addressed the reporting years 1977, 1987, 1995, 2001, 2010 and 2015. New industrial classifications (NACE, rev. 1) were implemented for the reporting years 1993 and (NACE, rev. 2) 2008 reporting year. These 'technical' adjustments did not lead to revisions of the macroeconomic data. Table 1.1 below shows the adjustments in GDP-figures in the subsequent revision years.

Table 1.1 GDP revisions in benchmark years

		1969	1977	1987	1995	2001	2010	2015
		million euros						
GDP after revision 2015		NA	NA	NA	**329.547**	**481.881**	**639.187**	**690.008**
Rev 2015		NA	NA	NA	4.206	5.185	7.675	6.551
Rev 2010	**Orig 2015**	NA	NA	NA	20.080	28.965	44.723	**683.457**
Rev 2001	**Orig 2010**	-63	1.374	810	3.028	18.386	**586.789**	
Rev 1995	**Orig 2001**	2.173	4.410	7.793	11.972	**429.345**		
Rev 1987	**Orig 1995**	676	1.788	4.841	**290.261**			
Rev 1977	**Orig 1987**	2.848	6.135	**195.203**				
	Orig 1977	→ → →	**118.623**					
	Orig 1969	**46.156**						

In a benchmark revision, all recent insights are processed simultaneously and all level estimates are reviewed. Subsequently the existing time series are back-casted accordingly, restoring comparability over time. Benchmark revisions obviously require considerable effort, which makes annual benchmarking and back-casting very resource demanding, particularly in the context of maintaining full consistency of all GDP estimates within a quarterly and annual supply-use framework. Similarly, such a strategy would not be appreciated by the most important national accounts users in the Netherlands.

Many of the revision adjustments are explained on the basis of five overarching themes.

1. GNI verification by the European Commission (Eurostat) and EDP dialogue visit

An information visit to CBS in December 2016 formed part of the verification by the European Commission (Eurostat) of the correct application of the European System of Accounts (ESA 2010) in the determination of GNI figures as used for contribution to the EU own resources. Eurostat identified 14 action points for possible improvement of the Dutch methodology and calculations:

- Level estimates on which any extrapolations are based must be no older than five years;

- Trade margins should be adjusted for price gains (holding gains and losses);
- The valuation of production of some financial services is still based on the sum of the costs; these estimates should preferably be replaced by output-oriented methods;
- Financial services (FISIM: see section 6.1) should be based on a reference interest rate tailored to the sector;
- Insurance services based on the sum of costs should preferably be replaced by output-oriented methods;
- It is desirable to draw a distinction between the rental of dwellings and the rental of the inventory they contain;
- The imputed rental of owner-occupied dwellings should be calculated using a sufficiently stratified method, in accordance with the calculation methodology most commonly used in Europe.
- The (imputed) rental of holiday homes should be checked for double counting and any omissions;
- The determination taxes and subsidies on production should be set against the government's cash receipts;
- Decommissioning costs for drilling platforms and nuclear power plants should be included in gross fixed capital formation;
- Changes in strategic (petroleum) reserves should be included in the change in inventories;
- Inventory movements should be adjusted for price gains;
- The determination of transit trade should (preferably) be based on international trade in service statistics;
- The difference in imputed and received VAT should be resolved.

All these points have been investigated by CBS and the results have been incorporated in this estimates resulting from the benchmark revision.

The EDP dialogue visit from the European Commission in January and February 2018 (in the context of government figures) also resulted in a list of action points, some of which have been incorporated in the benchmark revision estimates in consultation with the European Commission. These concern the following points:

- Classification of Energie Beheer Nederland (EBN) in the general government sector;
- The costs of capital formation through public-private partnerships, such as highways and buildings, and the related increase in debt should be annually recorded from the inception of the project to the end of the construction phase. The previous practice was that the total costs (and the increase in debt) were only recorded at the end of the construction phase;
- Change of the method of recording state export credit insurances. Claim payouts are only recorded as capital transfers with a negative effect on the balance if the state waives the claims or considers them irrecoverable.
- A number of state guarantee schemes that were treated as standard guarantees are now one-off guarantee schemes.

2. Sector classifications/reclassifications

The national accounts use two systems to classify businesses, one by type of economic activity, the NACE Rev2 classification, and one by sector code. Both classifications are maintained in the general business register (GBR) of CBS. With regard to the sector coding in the GBR, CBS has made additional efforts in recent years to improve the classification of businesses, partly based on European regulations on statistical business registers. This has led to changes in the

sector coding attributed to businesses. This in turn has impacted the post-revision results of the national accounts.

The research into statistical units also led to around 250 businesses previously considered to be special purpose entities (SPEs) being transferred to the non-financial corporations sector after joint research and coordination with DNB. This is due in part to a reinterpretation of the European guidelines (ESA 2010). The recommendations of an international statistical task force 'Holdings and head offices' led to refinements of the interpretation of the SNA and the ESA in this area. Some multinational enterprises or parts of it with substantial financial positions (including outside the Netherlands) combine this channelling function with a degree of non-financial productive activities in the Netherlands. In accordance with the task force's more stringent international guidelines, these businesses should be classified as non-financial corporations and not as financial institutions, as was the case hitherto in the Dutch national accounts. This adjustment has consequences, among other things, for the 'private debt' macro indicator, which consequently increases considerably. This shift also means that the definition of production for the respective units has been changed in accordance with the applicable international guidelines from a sum-of-costs approach to a market approach. Since the ancillary activities are now explicitly included in the national accounts, this increases GDP.

Various other reclassifications of businesses, business units and institutions took place in this revision, particularly in the general government sector.

3. Collaboration between DNB and CBS

With effect from the revision for the 2015 reporting period, the rest of the world account of national accounts of CBS and the balance of payments of DNB will be drawn up by means of a joint statistical process and aligned fully with each other. That means there will no longer be any differences in the key figures concerning the balance of the current account and the net external assets of the Netherlands. The achievement of full consistency also allows compliance with the recommendations of European bodies such as Eurostat and the ECB. The investigation into differences between the balance of payments and sector accounts has deepened our combined knowledge of their causes. The joint process of research of source data and balancing has improved not only the alignment between sector accounts and the balance of payments, but also the two sets of macro statistics themselves. This has a substantial impact particularly in the financial part of the balance of payments and the national accounts. For example, in the national accounts there has been a substantial downward adjustment to net external assets.

4. The effects of globalisation

Progressive globalisation is a challenging phenomenon in relation to the national accounts. The international integration of production activities in global production chains makes it difficult to allocate these activities to the economies of individual countries. Major changes were made in ESA 2010 that contribute to a consistent allocation of goods and services transactions to countries. These include more stringent guidelines for processing and transit trade. These guidelines were implemented in the national accounts in the 2010 benchmark revision. Since that time, the understanding of the way in which multinational enterprises have organised their production activities and its impact on the production of (economic) statistics has grown substantially. For some companies this led to changes in the way in which information on their economic activity in the Netherlands was incorporated in the national accounts in the 2015 revision.

The scope of the 2015 revision specifically included a change to the way in which royalty and licence businesses are recorded. These businesses were moved from financial institutions to non-financial corporations. The valuation of these businesses' production was also modified. The sum-of-costs approach was replaced by a valuation based on market transactions. In the case of the Netherlands, these businesses are generally characterised by a considerable throughput of royalty services. Only the difference between the inflow (import) and the outflow (export) is counted as the production of royalty and licence businesses. In other words, net rather than gross recording of production was adopted. This makes no difference to GDP. Net recording was chosen because gross recording would unnecessarily distort imports and exports.

In 2015 a Dutch-domiciled unit of a large international operating company purchased €22 billion of intellectual property from outside the Netherlands. A more detailed investigation as part of the 2015 revision showed that this mainly comprised R&D purchases rather than purchases of non-produced assets (brand names) as had been decided on the basis of earlier information. In accordance with the applicable international guidelines for the compilation of national accounts, this led to a sharp upward adjustment to gross fixed capital formation and imports of services in reporting year 2015 after the revision. This transaction caused an incidental upward jolt to both figures in 2015. This will result in an ostensibly less positively 'distorted' picture of the growth of capital formation in 2016.

5. New (administrative) data sources

The Netherlands has extensive basic registration systems. Part of the CBS statistics based on them were already included in national accounts in the previous benchmark revision. The use of registration systems was further expanded in the 2015 benchmark revision. In the estimation of various economic aspects of housing and home ownership, for example, the Basic Register of Addresses and Buildings (BAG) was used for the first time and the use of income tax data from the Tax and Customs Administration led to a higher estimate of Dutch households' mortgage debt. More extensive use was made of VAT information from the Tax and Customs Administration than in the 2010 benchmark revision in order to gross up business statistics. Various new, or adapted CBS sources were also used, such as the updated statistics on International Trade in Services, the results of the comparison of the Direct Reporting (DRA) data source from DNB with the Financial Statistics on Companies, profit returns of self-employed persons and financial data of agricultural businesses.

The revision 2015 of the national accounts had the following main consequences for the macroeconomic aggregates and policy indicators. Gross domestic product (GDP) for 2015 was adjusted upwards by €6.6 billion to a total of €690 billion, a rise of 1.0 percent. The balance of primary incomes received from and paid to the rest of the world was adjusted upwards by €4.4 billion. This was due to substantial adjustments to the gross profit flows resulting from the full alignment between the national accounts and the balance of payments. Gross national income (GNI = GDP + net primary incomes) was consequently adjusted upwards by €10.9 billion, a rise of 1.6 percent. The government's deficit (EMU definition) after revision amounts to -€14 billion (-2.0 percent of GDP). The government's EMU debt was adjusted upwards by €5.7 billion and now amounts to €447 billion. As a result of the upward adjustment to GDP, EMU debt, expressed as a percentage of GDP, now amounts to 64.8 percent. Before the revision the EMU debt was 64.6 percent of GDP. The labour input of employed persons was reduced by 22k FTE jobs to 7,015k FTE jobs and the labour input of self-employed persons was reduced by 15k to 1,195k FTE jobs. Compensation of employees was adjusted upwards by €207 million. Net external assets was adjusted downwards by €174 billion to €346 billion. This was also due

to the alignment between the national accounts and the balance of payments, including the international capital formation position.

1.2.2 The timetable for revising and finalising the estimates

The publication National accounts of the Netherlands (online and as pdf-file) is annually released by the end of June of year t. This release provides provisional estimates for the most recent year (t-1) and the 'final' estimates for years earlier. Provisional data are subsequently adjusted. Published final data are generally not revised; they remain unchanged until the next benchmark revision.

In general, preliminary data contain less levels of detail than the final results. For both provisional and final national accounts, the comparability of results over time is ensured.

For the QNA, two estimates are published, namely the flash estimate 45 days after the end of the quarter and the regular estimate 90 days after the end of the quarter. Consequently, a first annual estimate for (t-1) is available mid-February of year t and a second annual estimate is released by the end of March of year t.

1.3 Outline of the production approach

The main data sources

The Dutch GDP calculations are primarily production and expenditure approach based. Estimating GDP according to the production approach entails the calculation of value added by industry. Value added is calculated as the difference between output and intermediate consumption. The process table shows for each separate branch of industry the composition of output, intermediate consumption and value added. Starting point for the estimates is either a statistical/administrative source (or a combination of both), like the Structural Business Survey, or an extrapolation/model (e.g. the estimate of output for owner occupied dwelling services).

The structural business survey is coordinated on the basis of a Statistical Business Register SBR). The SBR records are obtained from the obligatory subscription of all businesses with the Chambers of Commerce (Nieuw Handelsregisters) including the unincorporated business. All businesses have to report on the nature of their activities in terms of NACE coding. Data on employment is integrally obtained from the employers' tax register. Its coordination is equally based on the SBR.

A variety of other surveys and administrative data sources are used for specific branches such as agriculture, forestry and fishing, financial and insurance activities, education, health and government services as for these branches business surveys are not available. Details on government activities are obtained administrative data of Central and Local Governmental bodies. For financial institutions most of the data sources originate from the Central Bank.

For National Accounts purposes adjustments of these sources are needed to meet the ESA 2010 requirements. On the one hand data adjustments are also needed to ensure exhaustiveness. Exhaustiveness adjustments cover among others illegal activities and hidden and informal economy. They are broken down in the Process Table according to the typology (N1-N7), according the "Eurostat's Tabular Approach to Exhaustiveness" (see document GNIC/050).

The Dutch SUT

In the Netherlands the production approach is applied within the framework of supply and use tables (SUTs) in conjunction with the expenditure and income approach. It is important to notice that operating surplus/mixed income is determined as a balancing item which implies the production and income approach are balanced at all times. The production and expenditure based estimations of GDP are integrated in the annually compiled supply-use tables. The Dutch SUT distinguishes approximately 130 industries and 650 product groups. Output and intermediate consumption have the same product group breakdown. Prior to balancing, all data sources are translated into the required product group classification and as such the SUT provides a structured overview of the supply and use of products including the possible occurrence of statistical discrepancies. In a subsequent step the production and expenditure based estimates are balanced individually for each product group by first examining and solving the largest discrepancies after which minor discrepancies are balanced in an automated way. In the process table the effect of balancing on the production approach of GDP is quantified in column (10). See table 1.2.

Table 1.2 Output, intermediate consumption and value added (GDP) Dutch Economy, 2015, according to the production approach

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	911.391	87.921	185.757	126.515	0	1.311.584	5.577	8.657	9.860	1.716	1.337.394
Intermediate cons.	576.075	34.659	89.778	15.097	0	715.609	4.115	9.777	-5.719	-7.223	716.559
Value added	335.311	53.262	95.984	111.418	0	595.975	1.462	-1.120	15.579	8.939	620.835

The first 6 paragraphs of Chapter 3 on the production approach of GDP raise general issues such as the reference framework, valuation issues and applied estimation methods. The other parts of the chapter (3.8 to 3.28) provide detailed descriptions of all the branches of industry. The last two paragraphs go into detail on taxes on products, including VAT (3.29) and subsidies on products (3.30).

Exhaustiveness

Chapter 7 provides an overview of the various types of adjustments made in relation to exhaustiveness in the production approach. Before the 2010 benchmark revision estimates addressing the non-observed economy (NOE) were already included. Following the tabular approach of Eurostat, the estimates for exhaustiveness are classified in the N-classes, i.e. N1 (underground production), N2 (illegal production, drugs, smuggling), N3 (producer is not obliged to register), N6 (cost fraud) and N7 (income in kind). This disaggregation, however, proved to be difficult due to several N-class overlaps and due to issues of interpretation. The results covering all branches of industry are shown in table 1.3.

Table 1.3 Estimates for exhaustiveness in the production approach disaggregated by N-classes, 2015

	Types of non-exhaustiveness							
	N1	N2	N3	N4	N5	N6	N7	Total
	million euros							
output	4564	5850	1127	0	0	0	-1681	9860
intermediate cons.	913	1089	208	0	0	-763	-7166	-5719
value added	3651	4761	919	0	0	763	5485	15579

The activities that contribute most to the value added are income in kind (5,485 million euros, part of N7), missing units in SBR and house renovations and maintenance (3,651 million euros, part of N1) and cannabis (4,761 million euros, part of N2).

1.4 Outline of the income approach

As stated in the section above, in the national accounts of the Netherlands the income approach is automatically balanced with the production approach as operating surplus/mixed income is determined as a balancing item in the SUT. Nevertheless independent estimates for value added components such as the compensation of employees and mixed income are made based on (administrative) statistical data. Next to that plausibility checks are carried out on (net) operating surplus. By applying the so-called 'dual classification' on the components of value added in the supply and use table, these are redistributed from the branches of industry of the supply and use tables to the sectors of the institutional sector accounts.

The main data sources

Several sources are used to rearrange the transactions from industries of the supply and use tables into the sectors in the sector accounts such as business statistics, statistics on corporate finance and the Statistical Business Register (SBR). The estimates of mixed income are based on the tax records of self-employed workers (the "Satelliet Zelfstandige Ondernemers", SZO) and used for splitting operating surplus/mixed income split. It must be emphasised that for large parts of the general government and the financial institutions data sources are primarily sector accounts oriented. The supply and use table estimates for these sectors are subsequently derived in close connection with the institutional sector accounts. Therefore the dual classification requires mainly supplementary estimations in relation to the non-financial corporations, households and non-profit institutions serving households and not or less for the government and financial institutions sectors.

Main results

In table 1.4 the data are summarised for the income approach. As gross operating surplus is derived as a residual item in the production method, no source data are used for an autonomous estimate of this variable. Therefore estimates for gross operating surplus appear only in the final column (11).

Table 1.4 Components of value added (GDP) Dutch Economy, 2015, according to the income approach

	Basis for NA Figures						Adjustments				
	Surv & cens.	Adm. Records	Comb. Data	Extrap./mod.	other	Total (sourc)	Data valid.	Concept.	Exhaustiven.	Balancing	Final est.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	million euros										
Compensation of employees	0	318.192	0	9.426	0	327.619	0	0	2.725	-77	330.267
Gross operating surplus	-	-	-	-	-	-	-	-	-	-	288.951
Mixed income	0	46.856	4.567	0	0	51.423	0	571	8.907	1.626	62.527
Taxes prod. and imp.	0	79.430	0	0	0	79.430	0	0	0	0	79.430
Subsidies	0	8.640	0	0	0	8.640	0	0	0	0	8.640
GDP	-	-	-	-	-	-	-	-	-	-	690.008

Exhaustiveness

The estimate for exhaustiveness in table 1.4 refers to income in kind and to additional estimates for tipping in some branches of industry, i.c. 49 “taxis”, 55/56 “hotels and restaurants etc.” and 96 “hairdressers”. See chapter 7.

1.5 Outline of the expenditure approach

The expenditure approach is to a large extent independently estimated within the context of the SUT framework. Within the Dutch SUT final expenditure compared and balanced with the industry-based estimates of output, intermediate consumption leading to harmonization of the expenditure and production approaches of GDP.

The main data sources

The main sources for the calculation of final consumption expenditure by households (including NPISH) are the household budget survey and SBS statistics on retail trade, as well as a number of supplementary surveys addressing special categories of consumption expenditure, for example the survey of paid rents for dwellings. For GFCF annual surveys of Statistics Netherlands are used and for changes in inventories most information comes from the SBS statistics. For the imports and exports of goods the international trade in goods statistics are used and for the imports and exports of services the international trade in services statistics are used, combined with some other sources such as information from the Dutch Central Bank in relation to measuring financial and insurance services.

Table 1.5 Components of value added (GDP) Dutch Economy, 2015, according to the expenditure approach

Compilation of GNI	Level of Details	Basis for NA Figures						Adjustments					
		Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	Total (adjustments)	Final estimate
Total final consumption expenditure		111346	166756	5358	169403	0	452863	0	22696	8077	-466	30307	483170
Household final consumption expendi	Total	110740	19798	478	140270	0	271286	0	26433	8077	-424	34086	305372
NPISH final consumption expenditure		606	0	4880	0	0	5486	0	0	0	-42	-42	5444
General government final consumption expenditure		0	146958	0	29133	0	176091	0	-3737	0	0	-3737	172354
Gross capital formation		46923	19986	4954	51476	33196	156535	12	-771	965	-1661	-1455	155079
Gross fixed capital formation	Total	43796	19986	4954	51195	33196	153127	12	-277	965	-1294	-594	152533
Changes in inventories		3127	0	0	0	0	3127	0	-494	0	-388	-882	2244
Acquisitions less disposals of valuables		0	0	0	281	0	281		0	0	21	21	302
Exports of goods and services		585543	0	0	3476	0	589019	-33055	14257	4798	-4666	-18666	570353
goods		418946	0	0	0	0	418946	-17480	14701	4504	-2297	-572	418374
services		166597	0	0	3476	0	170073	-15575	-444	294	-2369	-18094	151979
Imports of goods and services		521974	0	0	5514	0	527488	884	-15460	2084	3598	-8894	518594
goods		372206	0	0	0	0	372206	-10062	-15416	1792	4406	-19280	352926
services		149768	0	0	5514	0	155282	10946	-44	292	-808	10386	165668
Gross domestic product		221838	186742	10312	218841	33196	670929	-33927	51642	11756	-10391	19080	690008

Exhaustiveness

The estimate for exhaustiveness in table 1.5 is disaggregated into N-classes. For Household Final Consumption Expenditure (including NPISH) the total estimate of 8.065 million euros is divided into the classes N1 (hidden activities), N2 (illegal production, drugs, prostitution), N3 (not registered production, e.g. cleaning of dwellings and babysitting), N6 (impact of cost fraud) and N7 (wages in kind). The negative estimate N9 of –484 million euros is the result of the elimination of the VAT difference.

Table 1.6 Estimates for exhaustiveness in the total household final consumption expenditure disaggregated by N-classes

	Types of non-exhaustiveness							
	N1	N2	N3	N4	N5	N6	N7	Total
Consumption of Households	1823	752	196			279	5027	8077
Gross fixed capital formation	0	534	543			-112	0	965
Exports	0	4380	0			-52	470	4798
Imports	0	1156	10			0	918	2084

1.6 The balancing or integration procedure, and main approaches to validation

Chapter 6 deals with valuation issues and balancing of the Dutch supply and use table. Further, the classifications of the rows (product groups) and columns (branches of industries, final expenditure categories) on the working level of the SUTs are reviewed. An important point is that the source data are directly linked to the units of observation as defined in the statistical business register (SBR). The current balancing process entails a simultaneously balancing of values and volume terms i.e. balancing in terms of prices of the previous year.

General procedure

In the first stage of the balancing process the largest discrepancies between supply and use are taken into account. The process of eliminating these large (absolute and relative) discrepancies is a manual process requiring the expertise and involvement of 'transaction and branch specialists'. In a second stage the remaining minor discrepancies are solved by way of automatic balancing with the help of a so-called "balancing machine". In short, this is a mathematical optimisation procedure under a set of restrictions, e.g. "hard" restrictions implying that no adjustments are allowed.

Final check

When the balancing is completed, the supply and use table (SUT) produce a set of consistent and coherent data of supply and use of goods and services on a detailed level in current prices and in volume growth terms (including plausible value, price and volume changes). The results are discussed by a small group of (process) managers and experts that are not necessarily involved in the compilation process. This final review may lead to usually a restricted number of final data improvements which bring the SUT compilation process to an end.

Table 1.7 Balancing adjustments production method, million euros

	Initial est.	Balancing	Final est.
	million euros		
Output of goods and services	1.337.140	1716	1.338.856
Intermediate consumption	725.244	-7223	718.021
Gross value added	611.896	8939	620.835
Taxes on products	69.896	0	69.896
Subsidies on products	723	0	723
Gross domestic product	681.069	8939	690.008

*In table 1.7 the variables 'output' and 'intermediate consumption' include a re-routing of purchases by enterprises via retailers of 1462 million euros. This explains the difference with official published statistics.

Table 1.8 Balancing adjustments expenditure method, million euros

	Initial est.	Balancing	Final estimate
Final consumption expenditure	483636	-466	483170
Gross capital formation	156740	-1661	155079
Exports of goods and services	575019	-4666	570353
Imports of goods and services	514996	3598	518594
Gross domestic product	700399	-10391	690008

In the process tables, the deciding factor for the recording of adjustments is whether, considering the state of art of the data sources, it would have lead (without using any information from other data source) to a different initial estimate of the concerning industry or expenditure category. If so, the adjustment is recorded under data validation, if not it is recorded under balancing adjustments. The results in Tables 1.7 and 1.8 are based on this criterion. Only the result from the production and expenditure approaches are shown as the income approach cannot be independently applied from the production approach.

1.7 Overview of the allowances for exhaustiveness

The approach to exhaustiveness that is followed at Statistics Netherlands is activity specific. As a first step, a list of activities is compiled of which part of output is thought to be non-observed. Secondly, for each activity an estimate of output and intermediate consumption is made, using the most suitable method given available data sources. In the case of illegal activities, supplementary to production side estimates, expenditure side estimates are made. Examples of used data sources are research reports, administrative data, newspaper articles and internet information. Sometimes, due to a lack of information, estimates are based on expert judgement. The last step is to translate the estimated non-observed activities into labour inputs. Hereto information is used about average remuneration for specific activities derived from the survey on underground activities. In a second step, the number of hours worked is translated into full time equivalents (fte) and the number of fte's is translated into the number of jobs (distinguishing self-employed and employees) taking into account the expected average number

of hours worked per worker (part-time factor). As a result, consistency is achieved between the supply and use tables, the institutional sector accounts and the labour accounts.

For non-benchmark year the estimation process depends on the specific activity in question and the available data. In most cases the 2015 benchmark estimate will be extrapolated, based on the development of indicators such as population, prices, or growth rates in specific NACE activities. Parameters used in the activity specific methods such as seizure rates for drugs are usually not revised, due to the absence of reliable and comparable annual data. Methodological revisions as well as the addition of new NOE-activities in principle only occur in benchmark revisions.

The production approach is generally considered most exhaustive because of the use of the statistical business register and the use of administrative data. For a number of industries the initial production data from business statistics are overruled by expenditure side data. For instance, in the case of hairdressers, the consumption estimate of hairdressing services is based upon population data and the number of visits by customers and prices charged. The reported value in business statistics is adjusted in order to include underground production.

Technically speaking, the estimates for NOE-activities are added to estimates of production and (final) use in the processing stage prior to balancing. An additional mark-up is added or an adjustment to observed data for certain activities is made. This requires that the estimates for non-observed output and intermediate consumption are translated into the required product and industry detail of the Dutch national accounts. It needs to be mentioned that due to the issue of double counting value added of non-observed activities is not necessarily equal to the impact of their inclusion on GDP. Some revenues will already be included in national accounts, for instance, coffee shops (sales of cannabis) are included as statistical units in the statistical business register and therefore will have (at least) imputed production as a consequence of the grossing up of /samples. Also some expenses may already be recorded in the accounts as final consumption of households. Some of these expenses need to be relocated or adjusted because of double counting.

In table 1.9 an overview is given for estimated non-observed activities, their type (N-class) and the values of output, intermediate use and value added in the production approach.

Table 1.9 Overview of estimates made for exhaustiveness

Activity	Type	Isic	Production	Int. Cons.	Value Added
House renovations and maintanance	N1	41,43	1485	743	742
Car repair and maintanance	N1	45	213	56	157
Food/beverage service activities	N1	56	280	49	231
Hairdressers and landscaping	N1	81, 96	560	54	506
Cleaning houses and buildings	N1	81	1337	0	1337
Babysitting and childcare	N1	88	316	0	316
Other	N1	multiple	373	11	362
Subtotal			4564	913	3651
Cannabis	N2	12,56	4053	1137	2916
Drugs	N2	21,47	680	59	621
Smuggling cigarettes and fencing	N2	47	488	49	439
Illegal copying and gambling	N2	59,92	218	35	183
Temporary employment mediation	N2	78	316	16	300
Prostitution	N2	96	607	214	393
Adjustment double counting	N2		-512	-421	-91
Subtotal			5850	1089	4761
Own account construction	N3	41	208	151	57
Tips	N3	49,55,56	567	0	567
Onw account energy production	N3	35	176	0	176
Renting of dwellings	N3	68	164	50	114
Other	N3	01	12	7	5
Subtotal			1127	208	919
Cost Fraud	N6	multiple	0	-763	763
Subtotal			0	-763	763
Income in kind	N7	multiple	158	-4869	5027
Double counting aggriculture	N8	multiple	-1839	-1327	-512
Vat gap	N9	multiple	0	-970	970
Subtotal			-1681	-7166	5485
Total			9860	-5719	15579

1.8 The transition from GDP to GNI

Cooperation between the Dutch Central Bank and Statistics Netherlands

With effect from the revision for the 2015 reporting period, the rest of the world account of national accounts of CBS and the balance of payments of DNB will be drawn up by means of a joint statistical process and aligned fully with each other. That means there will no longer be any differences in the key figures concerning the balance of the current account and the net external assets of the Netherlands. The achievement of full consistency also allows compliance with the recommendations of European bodies such as Eurostat and the ECB. The investigation into differences between the balance of payments and sector accounts has deepened our combined knowledge of their causes. The joint process of research of source data and balancing has improved not only the alignment between sector accounts and the balance of payments, but also the two sets of macro statistics themselves. This has a substantial impact particularly in the financial part of the balance of payments and the national accounts. For example, in the national accounts there has been a substantial downward adjustment to net external assets.

Main data sources in relation to property income

Table 1 of chapter 8 shows the 2010 GDP-GNI difference (0.5 billion euros). The balance of property income (8.7 billion) is the result of extremely large property income payments to (248.4 billion), and receipts from (257.1 billion) the rest of the world. The size of these gross in- and outflows correspond to more than 33 per cent of GNI.

With regard to measuring these property income flows, one of the main sources is a dedicated BoP survey of DNB called “Directe RApportage” (DRA). Another major source is “Statistiek Financiën Ondernemingen” (SFO), which consists of a survey for large non-financial corporations (SFGO) and of tax data for small non-financial corporations (SFKO). In addition to BoP, supplementary data sources, referring to non-financial corporations, financial institutions, government, households, non-profit institutions serving households (NPISH), are used to compile the GDP-GNI transition items.

Table 1.10 Transition from GDP to GNI, 2015, million euros

	Basis for NA Figures						Adjustments				
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Model	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	Final estimate
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
GDP	335 311	122 435	96 391	111 418	0	665 555	1 064	-1 129	15 579	8 939	690 008
Comp empl from ROW	1 903	0	0	0	0	1 903	0	0	0	0	1 903
Comp empl paid ROW	0	8 439	0	0	0	8 439	0	152	0	0	8 591
Taxes on prod/EU	0	3 117	0	0	0	3 117	0	0	0	0	3 117
Subsidies/EU	0	– 1 598	0	0	0	– 1 598	0	0	0	0	– 1 598
Property Income from ROW	248 365	0	0	0	0	248 365	0	– 3 453	0	12 186	257 098
Property Income paid ROW	245 050	0	0	0	0	245 050	0	– 5 749	0	9 061	248 362
GNI	340 529	112 477	96 391	111 418	0	660 815	1 064	1 015	15 579	12 064	690 537

Table 1.10 shows the items in the transition from GDP (final estimate is 690.008 million euro) to GNI. In chapter 8 the transition is shown in more detail. The attached file contains the detailed process table for the reporting year 2015.

Annex A Framework of the ESA 2010 GNI

1.9 Main classifications used

Chapter 9 provides an overview of the classifications used in the supply and use table (SUT) and the institutional sector accounts.

The first classification refers to the so-called regkols, which is a Dutch abbreviation for the column entries in the SUT (the branches of industry and final expenditure as used in the tables). The list of regkols connects the regkol to NACE, rev. 2 codes and includes the regkol names and those of the corresponding 4 or (if necessary) 5 digits NACE, ref. 2 codes. The product classification in the SUT as presented in chapter 9 is linked to CPA.

Chapter 9 also provides an overview of the sector-classifications as found at compilation level in the institutional sector accounts system together with the classification of transactions in the sector accounts.

The classification of the branches of industry in the labour accounts is principally the same as the regkols in the SUT. The relationship between the Sectors and the regkols for output (table 3.1.1), intermediate consumption (table 3.1.2) and value added (table 3.1.3) is described in chapter 3 on the more aggregated level (the so-called “dual classification”). In the National Accounts publications (e.g. on StatLine) the dual classification is published for value added components including compensation of employees.

The third section of chapter 9 introduces the classifications underlying the expenditure approach of GDP. The classification of goods and services found in the household budget survey includes nearly 2.200 lines items. These items are bridged to the classification of goods and services in the SUT (an excel sheet is attached to chapter 9). Chapter 9 also includes information on the relationship between the classifications of goods and services in international trade and the SUT.

Finally, the classification of gross fixed capital formation by asset type at compilation level is presented in this section.

1.10 Main data sources used

The main data sources are listed in chapter 10. For the production approach the main data source is the Structural Business Statistics (SBS). This is why the SBS is separately discussed in chapter 3. Paragraph 3.2.2 explains that in 2009 a new compilation system for the SBS was implemented. This was part of an overall redesign programme of economic statistics. One important feature of the new system is the increased use of administrative data (VAT data). In table 1 in paragraph 3.2.2 population and sample sizes of the SBS in 2010 are listed. Dedicated questionnaires are used for the various industry categories. In chapter 10 an example is attached for the manufacturing industry.

Other surveys used for the production approach are government statistics, health accounts and statistics on financial corporations. For each these surveys the questionnaires are attached and the key figures of the surveys are given according the scheme of Eurostat.

The administrative data in the Statistical Social Database (SSD) are a key source underlying the income approach. These data form the basis for the labour accounts, which are fully integrated in the Dutch national accounts. The SSD contains information from the administrations of the social security institutions and has an almost full coverage of the compensation of employees in the Netherlands. Section 10.2 provides a description of the

administrative records of employment and social insurance. A very important source for financial transactions in the Dutch national accounts is the Direct Reporting Scheme (DRA) from the Central Bank. According the Eurostat template, the characteristics of this source are listed in chapter 10. Two examples of DRA questionnaires are added.

A survey form of the international trade in services questionnaire is attached to section 10.3 which sums up those surveys underlying the expenditure approach. In addition to the GFCF survey list section covers e.g. ICT usage and ICT expenditure survey, the R&D survey. Also reference is made to the international trade in goods survey (for intra EU-trade) and to the information obtained from customs (for trade with third countries). Section 10.3 includes a reference to the CBS webpage with more detailed information on the household budget survey and the GFCF survey.

CHAPTER 2 THE REVISIONS POLICY AND THE TIMETABLE FOR REVISING AND FINALISING THE ESTIMATES; MAJOR REVISIONS SINCE THE LAST VERSION OF THE GNI INVENTORY

The statistical representation of an economy should preferably satisfy two conditions, namely (1) up-to-date level estimates and (2) continuity in terms of correct value, price and volume changes. Up-to-date level estimates relate to the most accurate possible description of the economic process over a given period, whilst continuity concerns comparability in time of the description over several periods. It is not always possible to meet both requirements simultaneously. In the Dutch national accounts priority is given to comparability in time with respect to the latest benchmark year. This priority implies that level shifts are not taken into account in the national accounts estimates until the next benchmark revision. Price and volume changes between two subsequent periods are estimated using the up to date source data however adjusted for level shifts. These adjustments guarantee estimated levels that are fully comparable with the corresponding benchmark year. In this way, the continuity requirement is met while still using up to date source data.

The up-to-date requirement is met by conducting regular benchmark revisions of the national accounts. The level estimates are then adjusted in line with the latest insights, concepts, definitions, classifications, estimation methods and the like.

Revision policy

National accounts estimates are regularly updated when new information becomes available. Each reporting year is covered by a sequence of two national accounts estimates. For the most recent year (t-1) provisional estimates are made which rely heavily on the results of the quarterly estimates. The final estimate (t-2) is done independently from earlier estimates, using mostly annual data sources which are not earlier available such as business statistics, R&D-statistics and statistics on GFCF. After publication of the final estimates generally further data revisions do not occur. They remain unchanged until the next benchmark revision.

The timetable for annual (routine) revisions is the following:

The press release and online data are released annually at the end of June. The publication 'National accounts of the Netherlands' (online and as pdf-file) is released in the first half of July. This release provides provisional estimates for the most year (t-1) and the 'final' estimates for previous years. Provisional data are subsequently adjusted. Published final data are generally not revised until the next benchmark revision.

National accounts published in June of year T:

- provisional figures for year T-1;
- final figures for year T-2.

National accounts published in June of year T+1:

- provisional figures for year T;

- final figures for year T-1.

National accounts published in June of year T+2:

- provisional figures for year T+1;
- final figures for year T.

Etc.

For the compilation of provisional estimates the SUT follows a less detailed product classification compared to the final estimates. For both preliminary and final estimates in the national accounts comparability in time is ensured.

For the quarterly national accounts two estimates are published, namely the flash estimate 45 days after the end of the quarter (only the SUTs) and the regular estimate 90 days estimate after the end of the quarter (SUTs and sector accounts). Consequently, a first annual estimate for GDP of T-1 is available mid-February of year T and a second annual estimate is released by the end of March of year T. This estimate is updated in the June/July annual data release.

Table 2.1 provides an overview of the impact of routine and benchmark revisions on GNI for the period 2010-2017.

Table 2.1 Impact of routine and benchmark revisions on GNI and GDP, according to ESA2010

		2010	2011	2012	2013	2014	2015	2016
GDP		million euros						
2010 Benchmark;	Year of publication: 2014	631 512	642 929	640 644	642 851			
2010 Benchmark;	Year of publication: 2015	631 512	642 929	645 164	650 857	662 770		
2010 Benchmark;	Year of publication: 2016	631 512	642 929	645 164	652 748	663 008	676 531	
2010 Benchmark;	Year of publication: 2017	631 512	642 929	645 164	652 748	663 008	683 457	702 641
2015 Benchmark;	Year of publication: 2018	639 187	650 359	652 966	660 463	671 560	690 008	708 337
Routine revisions		.	.	4 520	9 897	238	6 926	.
Benchmark revisions		7 675	7 430	7 802	7 715	8 552	6 551	5 696
GNI								
2010 Benchmark;	Year of publication: 2014	635 504	643 351	648 536	644 231			
2010 Benchmark;	Year of publication: 2015	636 626	654 687	658 450	663 703	671 126		
2010 Benchmark;	Year of publication: 2016	636 626	654 687	658 450	661 879	661 287	674 079	
2010 Benchmark;	Year of publication: 2017	636 626	654 687	658 450	661 879	661 287	679 610	694 231
2015 Benchmark;	Year of publication: 2018	641 063	659 458	664 145	669 408	669 898	690 537	697 862
Routine revisions		.	.	9 914	17 648	– 9 839	5 531	.
Benchmark revisions		4 437	4 771	5 695	7 529	8 611	10 927	3 631

Benchmark revisions

The ‘up-to-date’ requirement is met by conducting on a five year time schedule the regular benchmark revisions. The purpose of these revisions adjusting level estimates in line with the latest insights, concepts, definitions, classifications, estimation methods and the like.

Economies are changing continuously. The most eye-catching examples in recent years are e.g. the internet boom, on-going globalisation of production chains, the growth of trade in financial products such as derivatives and the increasing role of intellectual property products such as research and development. The statistical representation of an economy in the national accounts (NA) must be in line with these developments. This is why the guidelines for the compilation of the NA require a regular update. Under the auspices of the United Nations the modernization of the guidelines was carried out and laid down in the System of National Accounts 2008 (SNA2008). The SNA2008 is fully consistent with the Balance of Payments Manual 6 of the International Monetary Fund.

Because of the administrative use of NA data within the European Union (EU), such as establishing its own resources based on gross national income (GNI) and VAT and monitoring the agreements on government deficit and debt, a European version of the guidelines, the European System of Accounts 2010 (ESA2010) was compiled as well. ESA2010 is in full compliance with SNA2008. However, on a number of items the ESA2010 is more specific, more precise and more elaborated compared to SNA2008, in order to get a more harmonized interpretation of concepts in compiling NA within the EU. It also improves the international comparability of national accounts data, which is important in the context economic policy of the EU and the Economic and Monetary Union (EMU).

ESA2010 has the power of law within the EU. From September 2014 onwards the NA data from all member states of the EU are being compiled following the ESA2010 regulation. The GNI data used for the own resources of the European Commission are from the reporting year 2014 onwards based on ESA2010 methodology.

In the Netherlands benchmark revisions are carried out on a five year basis. A higher frequently would too much distort time series, which is undesirable for our major users. Particularly the Dutch Bureau for Economic Policy Analysis and the Dutch Central Bank do not welcome frequent revisions of time series as their forecasting models require consistent and long national accounts time series. Also benchmark revisions require substantive resources which is another important reason why level estimate re-assessments cannot be conducted on a more frequent (i.e. annual) basis. Together with a benchmark revision, all conceptual information and data updates are processed in one go, leading to updated level estimates for all variables in the system. The existing time series are then adjusted accordingly, which means data comparability over time is again re-established.

Previous Dutch benchmark revisions addressed the reference years 1969, 1977, 1987, 1995, 2001, 2010 and 2015. The immediate impetus of the 1995 and 2010 revisions was the introduction of ESA 95 and ESA 2010 respectively. The latest benchmark revision, reference year 2015, does not entail the introduction of new international guidelines. On some occasions refinements were made in the interpretation of the existing ESA2010 methodology.

2.1 Major revisions due to the transition from ESA 1995 to ESA 2010

2.1.1 Introduction

Conceptual changes in ESA2010 compared to ESA1995 are explained in chapter 2 of the 2010 GNI Inventory. This chapter in the 2015 Inventory only reports on further refinements and improvements made in the implementation of the ESA2010 guidelines as conducted in the course of the 2015 benchmark revision. Several of these refinements follow from the A-actions points as formulated by Eurostat in response of the GNI verification visit in December 2016. All these conceptual revisions are reported in section 2.3.

2.1.2 Transition from ESA 2010 to ESA 95, following the entries in Table 2 of the GNI questionnaire 2014

Table 2.2 in the 2010 GNI Inventory provided a quantitative overview of the ESA 2010 ESA95 transition items. This section provides an overview revisions made in these transition items in the course of the 2015 benchmark revision for those years to which these transition items still apply: 2010-2013

Table 2.2 ESA2010 to ESA95 transition items

GNI QUESTIONNAIRE 2018		NETHERLANDS		
Table 2: Transition from ESA2010 to ESA95		million EUR		
2010 - 2013				
As of 22/09/2018	2010	2011	2012	2013
Total impact of differences in definitions between ESA2010 and ESA95 on GNI	9809	10216	10901	15293
(ESA2010 minus ESA95)				
Of which:				
(1a) R&D created by a market producer	6604	6951	7137	10885
(1b) R&D created by a non-market producer	2994	3065	3130	3181
(2) Valuation of output for own final use for market producers	0	0	0	0
(3) Non-life insurance - Output, claims due to catastrophes, and reinsurance	-584	-702	-271	311
(4) Weapon systems in government recognised as capital assets	599	612	648	656
(5) Decommissioning costs for large capital assets	0	0	0	0
(6) Government, public and private sector classification	0	0	0	0
(7) Small tools	0	0	0	0
(8) VAT-based third EU own resource	196	289	257	260
(9) Index-linked debt instruments	0	0	0	0
(10) Central Bank - allocation of output	0	1	0	0
(11) Land improvements recognised as a separate asset	0	0	0	0
NB: The numbers of the transition items (1) to (11) correspond to the numbering used in the Manual on the changes between ESA95 and ESA2010.				

2.2 Major revisions since the GNI 2010 Inventory

2.2.1 GNI Revisions

At presence no reservations are placed on GNI figures for the Netherlands. This is why no related revisions are being reported.

2.2.2 Action points following from the GNI verification based on the 2010 GNI Inventory

An information visit to CBS in December 2016 formed part of the verification by the European Commission (Eurostat) of the correct application of the European System of Accounts (ESA 2010) in the definition of GNI figures as used for payments to the EU. Eurostat identified 14 action points for possible improvement of the Dutch methodology and calculations:

- Level estimates on which any extrapolations are based must be no older than five years;
- Trade margins should be corrected for price gains (holding gains and losses);
- The valuation of production of some financial services is still based on the sum of the costs; these estimates should preferably be replaced by output-oriented methods;
- Bank services (FISIM: see section 6.1) should be based on a reference interest rate tailored to the sector;
- Insurance services based on the sum of costs should preferably be replaced by output-oriented methods;
- It is desirable to draw a distinction between the rental of homes and the rental of the inventory they contain;
- The imputed rental of owner-occupied homes should be calculated using a sufficiently stratified method, in accordance with the calculation methodology most commonly used in Europe.
- The (imputed) rental of holiday homes should be checked for double counting and any omissions;
- The determination of production taxes and subsidies should be set against the government's cash receipts;
- Decommissioning costs for drilling platforms and nuclear power plants should be included in investments;
- Changes in strategic (petroleum) reserves should be included in the change in inventories;
- Inventory movements should be corrected for price gains;
- The determination of transit trade should (preferably) be based on international trade in service statistics;
- The difference in imputed and received VAT should be resolved.

All these points have been investigated by CBS and the results have been incorporated in the Dutch national accounts according to this new revision estimates. The detailed qualitative and quantitative description of these actions points is presented in the GNI 2018 Quality report.

2.2.3 Follow up EDP dialogue visits

The EDP dialogue visit from the European Commission in January and February 2018 (in the context of government figures) also resulted in a list of action points, some of which have already been incorporated in this revision estimate in consultation with the European Commission. These concern the following points:

- Classification of Energie Beheer Nederland (EBN) in the general government sector;
- The costs of investments through public-private partnerships, such as highways and buildings, and the related increase in debt should be entered from the inception of the project to the end of the construction phase. The previous practice was that the costs (and the increase in debt) were only entered at the end of the construction phase;
- Change to the method used to record state export credit insurances. Claim payouts are only entered as capital transfers with a negative effect on the balance if the state waives the claims or considers them irrecoverable.

- A number of state guarantee schemes that were treated as standard guarantees are now one-off guarantee schemes.

2.2.4 Classification issues

The national accounts use two systems to classify businesses, one by type of economic activity, the NACE Rev2 classification, and one by sector code. Both are maintained in the general business register (GBR) of CBS. With regard to the sector coding in the GBR, CBS has made additional investments in recent years, partly based on European laws on statistical business registers. This has led to changes in the sector coding allocated to businesses. This in turn has affected the post-revision national accounts.

The research into statistical units also led to several businesses previously considered to be special financial institutions (SFIs) being transferred to the non-financial companies sector after joint research and coordination with DNB. This is due in part to a reinterpretation of the European guidelines (ESA 2010). The recommendations of an international 'Holdings and head offices' statistical task force led to refinements of the SNA and the ESA in this area. Some international companies or company units with substantial financing positions (including outside the Netherlands) combine this channelling function with a degree of non-financial production activity in the Netherlands. In accordance with the task force's more stringent international guidelines, these businesses should be classified as non-financial companies and not as financial institutions, as was the case hitherto in the Dutch national accounts. This shift means that the definition of production from the respective units has been changed in accordance with the applicable international guidelines from a sum-of-costs approach to a market approach. Since the ancillary activities are now explicitly included in the national accounts, this increases GDP.

Various other reclassifications of businesses, business units and institutions took place in this revision, particularly in the general government sector.

2.2.5 Collaboration between CBS and DNB

With effect from the revision for the 2015 reporting period, the rest of the world account of CBS and the balance of payments of DNB will be drawn up by means of a joint statistical process and aligned fully with each other. That means there will no longer be any differences in the key figures concerning the current account balance and the external wealth of the Netherlands. The achievement of full consistency also allows compliance with the recommendations of European bodies such as Eurostat and the ECB. The investigation into differences between the balance of payments and sector accounts has deepened our combined knowledge of their causes. The joint process of source research and integration choices has improved not only the alignment between sector accounts and the balance of payments, but also the two sets of macro statistics themselves. This has a substantial impact particularly in the financial part of the balance of payments and the national accounts. For example, in the national accounts there has been a substantial downward adjustment to external wealth.

2.2.6 The effects of globalisation

Progressive globalisation is a challenging phenomenon in relation to the national accounts. The international integration of production activities in global production chains makes it difficult to allocate these activities to the economies of individual countries. Major changes were made in ESA 2010 that will contribute to a consistent allocation of goods and services transactions to countries. These include more stringent guidelines for processing and transit trade. These guidelines were implemented in the national accounts in the 2010 revision. Since that time, the understanding of the way in which multinational companies have organised their production activities and its impact on the production of (economic) statistics has grown substantially. For some companies this led to changes in the way in which information on their economic activity in the Netherlands was incorporated in the national accounts in the 2015 revision.

The scope of the 2015 revision specifically included a change to the way in which royalty and licence businesses are recorded. These businesses were moved from financial institutions to non-financial companies. The valuation of these businesses' production was also modified. The sum-of-costs approach was replaced by a valuation based on market transactions. In the case of the Netherlands, these businesses are generally characterised by a considerable throughput of royalty services. Only the difference between the inflow (import) and the outflow (export) is counted as the production of royalty and licence businesses. In other words, net rather than gross recording of production was adopted. This makes no difference to GDP. Net recording was chosen because gross recording would unnecessarily distort imports and exports.

In 2015 a Dutch-domiciled unit of a large international company purchased €22 billion of intellectual property from outside the Netherlands. A more detailed investigation as part of the 2015 revision shows that this mainly comprised R&D purchases rather than purchases of non-produced assets (brand names) as had been determined on the basis of earlier information. In accordance with the applicable international guidelines this led to a sharp upward adjustment to investments and imports of services in 2015 after the revision. This transaction caused an incidental upward jolt to both figures in 2015.

2.2.7 New administrative sources

In the Netherlands the use basic registration systems in official statistics is rather extensive. Many of them were already included in national accounts in the previous 2010 revision. The use of registration systems was further expanded in the 2015 revision. In the measurement of various economic aspects of housing and home ownership, for example, the Basic Register of Addresses and Buildings (BAG) was used for the first time and the use of income tax data from the Tax and Customs Administration led to a higher estimate of Dutch households' mortgage debt. Much greater use was made of VAT information from the Tax and Customs Administration than in the 2010 revision for the purpose of grossing up of business surveys.

Various new, or adapted, CBS sources were also used, such as the updated statistics on International Trade in Services, the results of the comparison of the Direct Reporting (DRA) source (DNB) with the Financial Statistics on Companies, profit returns of self-employed persons and financial data of agricultural businesses.

2.3 Planned actions for improvement

2.3.1 Improvements of source statistics

FRIBS

In 2011 preparations were started for a Framework Regulation for Integrating Business Statistics (FRIBS). The aim of this European program is to replace 10 separate laws for business statistics by one single law to achieve more consistency in statistics and to promote the use of existing data for more efficient production of statistics and less administrative burden. Furthermore a number of improvements in the statistical program are included that will be part of the future FRIBS. The Structural Business Statistics, an important source for the Dutch supply and use tables, will for example be extended to SIC-sections P, Q and R. Also the SIC-coverage of the service price index will be extended. The frequency of short-term statistics on turnover in services will change from quarterly to monthly, which may be expected to improve of the quarterly flash estimates of GDP-growth. Implementation of the changes as a consequence of FRIBS is expected to take place in the period 2020-2022.

Continued CBS-DNB cooperation

A first important step has been the full integration of national accounts and balance of payments. In subsequent steps, further changes will be made in the statistical programs of both organisations with the purpose of diminishing overlaps. In these rearrangements DNB will be in charge of surveys the financial institutions will CBS will be responsible for statistical information of all other (domestics) sectors: non-financial corporations, government and households. The rest of the world/balance of payments data requirements will be integrated in the data gathering of the domestic sectors which mains that the balance of payments survey (DRA) will gradually be phased out. This fully coordinated statistical program requires, among other things, statistical register coordination between the two organisations. To this purpose several working streams have been put into motion. The plan is to finalise the work program by mid-2020.

2.3.2 Improvements of the national accounts

Reducing the regular revisions in GDP growth

Reducing the revisions between the subsequent estimates of GDP growth is a continuous point of attention for Statistics Netherlands. The first estimate of quarterly growth is released 45 days after the end of the reporting quarter, the final estimate (apart from benchmark revisions) is published two and a half year after the end of the reporting year. In recent years a number of actions was taken to reduce the revisions between the first and the last estimate. The two most important ones are the reduction of the number of days that is needed to compile the flash estimate and the extended use of VAT-data in both STS and SBS (cf. section 2.3.7).

By reducing the processing time it takes to compile the quarterly estimates, the start of the compilation could be postponed by two days. This led to a significant increase in the available response in both survey and VAT-data that are used in the compilation of the flash estimates. By using VAT-data in grossing up for both STS and SBS the differences between these two important sources for respectively the quarterly estimates and the final estimates were reduced. In recent years the coverage in terms of SIC of the use of VAT-data was extended.

The preliminary conclusion is that as a result of all the efforts revisions between subsequent estimates indeed seem to have become smaller for the years 2015 to 2017. Nevertheless, also in the future Statistics Netherlands will need to keep a close watch on revisions between subsequent estimates and will continue its efforts to reduce these revisions.

CHAPTER 3 THE PRODUCTION APPROACH

3.1 GDP according to the production approach

Estimating GDP according to the production approach largely entails the calculation of value added by industry. Value added is calculated as the difference between output and intermediate consumption. Table 3.1 provides an overview of output, intermediate consumption and gross value added by branches of industry for the 2010 benchmark revision. The figures are consistent with the information provided in the Process Tables (annex A). The breakdown in table 3.1 corresponds to the tables in the annual publication National Accounts and is more detailed than NACE sections.

Tables 3.1.1 – 3.1.3 provide an overview of output, intermediate consumption and gross value added by NACE sections and institutional sectors.

Table 3.1 Output, intermediate consumption and value added (gross, basic prices), 2015

	Output	ermediate consumption	Value added
	million euros		
Industries			
Agriculture, forestry and fishing	30 359	18 461	11898
Mining and quarrying	18 874	6 305	12 569
Manufacturing	303 244	228 711	74 533
Manufacture of food, beverages and tobacco	66 359	51859	14 500
Manufacture of textile-, leatherproducts	3 386	2 287	1099
Manufacture of paper-, wood products, printing	12 892	9 043	3 849
Manufacture of coke and petroleum	25 285	23 781	1504
Manufacture of chemicals	41782	32 285	9 497
Manufacture of pharmaceuticals	5 784	3 361	2 423
Manufacture of plastic and building material	13 335	8 958	4 377
Manufacture of basic metals and -products	26 111	17 607	8 504
Manufacture of electronic products	40 332	35 589	4 743
Manufacture of electrical equipment	6 587	3 976	2 611
Manufacture of machinery n.e.c.	25 379	15 744	9 635
Manufacture of transport equipment	17 703	14 187	3 516
Other manufacturing and repair	18 309	10 034	8 275
Electricity and gas supply	17 859	10 042	7 817
Water supply and waste management	10 167	5 995	4 172
Construction	84 840	58 446	26 394
Construction buildings, development	34 160	25 714	8 446
Civil engineering	15 050	10 832	4 218
Specialised construction activities	35 630	21900	13 730
Trade, transport, hotels, catering	252 013	125 944	126 069
Sale and repair of motor vehicles	17 246	9 476	7 770
Wholesale trade (no motor vehicles)	96 428	43 879	52 549
Retail trade (not in motor vehicles)	38 107	14 850	23 257
Land transport	27 147	16 432	10 715
Water transport	9 407	6 301	3 106
Air transport	11235	7 689	3 546
Warehousing and support activities for transportation	22 655	11513	11142
Postal and courier activities	5 502	3 346	2 156
Accommodation and food service activities	24 286	12 458	11828
Information and communication	62 428	32 959	29 469
Publishing, audiovisual and broadcasting activities	12 557	7 645	4 912
Telecommunications	15 426	7 881	7 545
IT- and information services	34 445	17 433	17 012
Financial and insurance activities	86 893	34 399	52 494
Financial activities, no insurance and pension funding	57 143	18 624	38 519
Insurance and pension funding	21447	12 486	8 961
Other financial services	8 303	3 289	5 014
Real estate activities	84 189	44 685	39 504
Business services	162 982	73 408	89 574
Management, technical consultancy	81324	38 178	43 146
Research and development	4 265	2 473	1792
Advertising, design and other services	14 492	8 493	5 999
Renting and leasing of tangible goods	13 094	5 512	7 582
Employment activities	21823	4 316	17 507
Travel agencies, tour operators etc.	11223	7 624	3 599
Other business services	16 761	6 812	9 949
Government and care	195 686	64 050	131636
Public administration and defence; compulsory social security	74 148	30 107	44 041
Education	40 616	9 608	31008
Human health activities	45 383	14 735	30 648
Social work activities	35 539	9 600	25 939
Culture, recreation, other services	27 860	13 154	14 706
Arts, entertainment and recreation	14 719	7 605	7 114
Other service activities	12 609	5 549	7 060
Households with domestic personnel	532	0	532
Subtotal	1337 394	716 559	620 835
Goods and services n.e.c.	1462	1462	0
Total	1338 856	718 021	620 835

Table 3.1.1 Output by industry and institutional sector, 2015

	Total economy	Non-financial corporations	Financial corporations	General government	useholds incl. NPI's serving households
	million euros				
Industries					
Agriculture, forestry and fishing	30 359	7 030	0	164	23 165
Mining and quarrying	18 874	18 858	0	0	16
Manufacturing	303 244	291981	0	3 453	7 810
Manufacture of food, beverages and tobacco	66 359	61999	0	0	4 360
Manufacture of textile-, leatherproducts	3 386	3 188	0	0	198
Manufacture of paper-, wood products, printing	12 892	12 395	0	0	497
Manufacture of coke and petroleum	25 285	25 285	0	0	0
Manufacture of chemicals and pharmaceuticals	47 566	47 355	0	2	209
Manufacture of plastic and building material	13 335	13 129	0	0	206
Manufacture of basic metals and -products	26 111	25 418	0	0	693
Manufacture of electronic products	40 332	40 275	0	0	57
Manufacture of electrical equipment	6 587	6 540	0	0	47
Manufacture of machinery n.e.c.	25 379	25 309	0	0	70
Manufacture of transport equipment	17 703	17 621	0	0	82
Other manufacturing and repair	18 309	13 467	0	3 451	1391
Electricity and gas supply	17 859	17 445	0	40	374
Water supply and waste management	10 167	8 340	0	1355	472
Construction	84 840	69 601	0	0	15 239
Wholesale and retail trade; repair of motor vehicles	151781	135 125	0	0	16 656
Transportation and storage	75 946	67 981	0	3 022	4 943
Accommodation and food service activities	24 286	14 217	0	4	10 065
Information and communication	62 428	57 791	0	382	4 255
Financial and insurance activities	86 893	0	85 881	280	732
Real estate activities	84 189	32 036	0	9	52 144
Professional, scientific and technical activities	100 081	82 010	12	840	17 219
Administrative and support service activities	62 901	56 951	0	80	5 870
Public administration and defence; compulsory social security	74 148	0	0	74 148	0
Education	40 616	3 024	0	35 768	1824
Human health and social work activities	80 922	65 891	0	2 924	12 107
Arts, entertainment and recreation	14 719	8 337	0	1309	5 073
Other service activities	14 603	5 365	0	1397	7 841
Compensation of employees	1338 856	941983	85 893	125 175	185 805

Table 3.1.2 Intermediate consumption by industry and institutional sector, 2015

	Total economy	Non-financial corporations	Financial corporations	General government	useholds incl. NPI's serving households
	million euros				
Industries					
Agriculture, forestry and fishing	18 461	3 598	0	100	14 763
Mining and quarrying	6 305	6 301	0	0	4
Manufacturing	228 711	224 985	0	625	3 101
Manufacture of food, beverages and tobacco	51859	50 245	0	0	1614
Manufacture of textile-, leatherproducts	2 287	2 180	0	0	107
Manufacture of paper-, wood products, printing	9 043	8 754	0	0	289
Manufacture of coke and petroleum	23 781	23 781	0	0	0
Manufacture of chemicals and pharmaceuticals	35 646	35 619	0	1	26
Manufacture of plastic and building material	8 958	8 830	0	0	128
Manufacture of basic metals and -products	17 607	17 389	0	0	218
Manufacture of electronic products	35 589	35 558	0	0	31
Manufacture of electrical equipment	3 976	3 960	0	0	16
Manufacture of machinery n.e.c.	15 744	15 738	0	0	6
Manufacture of transport equipment	14 187	14 163	0	0	24
Other manufacturing and repair	10 034	8 768	0	624	642
Electricity and gas supply	10 042	9 946	0	11	85
Water supply and waste management	5 995	5 004	0	745	246
Construction	58 446	50 258	0	0	8 188
Wholesale and retail trade; repair of motor vehicles	68 205	61888	0	0	6 317
Transportation and storage	45 281	41708	0	1083	2 490
Accommodation and food service activities	12 458	7 579	0	2	4 877
Information and communication	32 959	30 713	0	221	2 025
Financial and insurance activities	34 399	0	33 997	134	268
Real estate activities	44 685	11116	0	5	33 564
Professional, scientific and technical activities	49 144	40 653	4	162	8 325
Administrative and support service activities	24 264	22 369	0	44	1851
Public administration and defence; compulsory social security	30 107	0	0	30 107	0
Education	9 608	1018	0	8 136	454
Human health and social work activities	24 335	20 033	0	870	3 432
Arts, entertainment and recreation	7 605	4 106	0	715	2 784
Other service activities	7 011	3 374	0	522	3 115
Compensation of employees	718 021	544 649	34 001	43 482	95 889

Table 3.1.3 Value added (gross, basic prices) by industry and institutional sector, 2015

	Total economy	Non-financial corporations	Financial corporations	General government	Households incl. NPI's serving households
	million euros				
Industries					
Agriculture, forestry and fishing	11 898	3 432	0	64	8 402
Mining and quarrying	12 569	12 557	0	0	12
Manufacturing	74 533	66 996	0	2 828	4 709
Manufacture of food, beverages and tobacco	14 500	11 754	0	0	2 746
Manufacture of textile-, leatherproducts	1 099	1 008	0	0	91
Manufacture of paper-, wood products, printing	3 849	3 641	0	0	208
Manufacture of coke and petroleum	1 504	1 504	0	0	0
Manufacture of chemicals and pharmaceuticals	11 920	11 736	0	1	183
Manufacture of plastic and building material	4 377	4 299	0	0	78
Manufacture of basic metals and -products	8 504	8 029	0	0	475
Manufacture of electronic products	4 743	4 717	0	0	26
Manufacture of electrical equipment	2 611	2 580	0	0	31
Manufacture of machinery n.e.c.	9 635	9 571	0	0	64
Manufacture of transport equipment	3 516	3 458	0	0	58
Other manufacturing and repair	8 275	4 699	0	2 827	749
Electricity and gas supply	7 817	7 499	0	29	289
Water supply and waste management	4 172	3 336	0	610	226
Construction	26 394	19 343	0	0	7 051
Wholesale and retail trade; repair of motor vehicles	83 576	73 237	0	0	10 339
Transportation and storage	30 665	26 273	0	1 939	2 453
Accommodation and food service activities	11 828	6 638	0	2	5 188
Information and communication	29 469	27 078	0	161	2 230
Financial and insurance activities	52 494	0	51 884	146	464
Real estate activities	39 504	20 920	0	4	18 580
Professional, scientific and technical activities	50 937	41 357	8	678	8 894
Administrative and support service activities	38 637	34 582	0	36	4 019
Public administration and defence; compulsory social security	44 041	0	0	44 041	0
Education	31 008	2 006	0	27 632	1 370
Human health and social work activities	56 587	45 858	0	2 054	8 675
Arts, entertainment and recreation	7 114	4 231	0	594	2 289
Other service activities	7 592	1 991	0	875	4 726
Compensation of employees	620 835	397 334	51 892	81 693	89 916

3.2 The reference framework

This section describes the reference framework for the production approach of GDP. Section 3.2.1 focusses mainly on the statistical business register (SBR) as the key coordination framework of most data sources underlying the production approach of GDP. The section explains the main sources feeding the business register, the units in the register, its maintenance strategy and the types of statistical units found in the register in relation to those units distinguished in ESA 2010. At the end of the section attention is paid to the quality of data sources underlying the production approach. Section 3.2.2 provides a discussion on the structural business statistics as the main source for estimating value added for most NACE-sections.

3.2.1 The business register

Statistical units in the Dutch Business Register

The Statistical Business Register (SBR) as maintained at Statistics Netherlands represents the survey framework for the official economic statistics of the Netherlands. The SBR contains

three basic units: the legal unit, the enterprise, and the enterprise group. The legal unit is the smallest unit in the register.

The main statistical unit is the enterprise. It is defined as the smallest combination of legal units representing an organizational unit engaged in producing goods and/or services and having a certain degree of autonomy in decision-making, especially concerning the allocation of its current resources. In general, an enterprise corresponds either to one legal unit or to a combination of legal units. In some cases, especially for public institutions and a few very large enterprise groups, a legal unit will be part of more than one enterprise.

The enterprise is the statistical unit that is used for almost all business surveys, including the annual structural business surveys. Its main characteristics are the economic activity, classified according to the Dutch, more detailed, version of the European NACE, and the size class, expressed in terms of employment. Each enterprise consists of at least one local unit, which is assigned automatically.

The third unit type identified in the business register is the Enterprise Group, defined as an association of enterprises, bound together by chains of ownership/control. In comparison to the enterprise, which is autonomous with regard to the allocation of its current resources, the enterprise group is an actor at a more strategic level, making strategic decisions on behalf of and affecting all of its constituent enterprises. They are formed using control relationships between legal units, since an enterprise group can also be considered as an association of legal units instead of enterprises. For multinational enterprise groups only the part consisting of legal units that are resident in the Netherlands is registered in the Dutch Business Register. The enterprise group is the statistical unit for the quarterly and annual survey on the finances of enterprise groups, aimed at collecting data on the profit and loss account and (changes in) balance sheets.

The relation between the statistical units in the business register and the units in ESA 2010

The units in the SBR are delineated according to the Eurostat business register recommendations manual and therefore strictly speaking not in full accordance with ESA 2010. However, in practical terms the definition of the institutional unit in ESA 2010 and the definition of the enterprise group in the manual on business register are closely related. Both the institutional unit and the enterprise group may be defined as an economic entity that is capable in its own right of owning assets, incurring liabilities and engaging in economic activities and in transaction with other entities. Therefore for national accounts purposes the enterprise group is considered as an appropriate approximation of the institutional unit.

A similar relationship holds with regard to the (local) Kind of activity Unit (KAU) and the enterprise. An institutional unit may be partitioned into local KAU's following the principles by which an enterprise group is partitioned into enterprises. Both the local KAU and the enterprise are defined as producers with activities that are characterized by an input of products, a production process and an output of products, whereby in the SBR the activities are classified at the class level (four digits) of NACE Rev. 2. In the definition of the local KAU emphasis is put on the location of production at a single site or at closely related sites. This is absent in the definition of the enterprise. In the business register the local KAU can be compared to the local unit as it is distinguished within an enterprise.

In the remainder of this chapter the terms enterprise group and enterprises will be used, because these are the terms used in the business register and the business statistics that represent an important building block of the production approach of GDP. From a national accounts perspective "enterprise group" should be read as "institutional unit" and "enterprise" as "KAU".

Sources for the Business Register

The most important source for the SBR is the trade register as maintained by the Dutch Chambers of Commerce. The trade register is the unique administrative source for legal units in the business register. In the trade register all legal units with one or more establishments on Dutch territory that perform economic activities are obliged to register by law, including unincorporated enterprises, private non-profit institutions, non-profit institutions serving businesses and non-market producers. One of the characteristics that are registered for each unit in the trade register is the NACE-coding. The trade register also supplies information on all 100% ownership relations between legal units. These ownership relations are necessary to determine the enterprise group in the SBR.

Another important source for the SBR is the register of the Dutch tax office. This register contains information on the units for value added tax (VAT), the units for corporate tax and the units for tax on wages. Next to the trade register administrative data on VAT and wage tax are used to check the exhaustiveness of the SBR. In the Netherlands the tax units for different sorts of taxes are not necessarily identical, especially not for larger enterprise groups. Moreover the tax register supplies additional information on ownership relations between legal units, including relations with less than 100% ownership. Also this information supports the determination of enterprise groups in the business register. More generally, the information from the tax office register is essential to link administrative data to statistical units, which facilitates their use in the compilation of business statistics.

The third important source for the Dutch business register is the administration of taxes on wages, which provides information on the number of persons employed for each legal unit.

Together these sources assure that the SBR is an (almost) exhaustive register for unincorporated enterprises, private non-profit institutions, non-profit institutions serving businesses and non-market producers.

However, the SBR does not cover NPISHs and general government units completely. NPISHs are present in the SBR as legal units, but will not lead to a statistical unit when economically insignificant. A very small number of general government units are missing in the trade register, because they are exempted from the obligation to register (parliament is an example). Because they are missing in the trade register these units are not included in the SBR either. However, from the supplementary government unit register, these omitting general government units are known. Data on government units are not necessarily collected via the SBR coordinated surveys, but are also directly obtained from exhaustive administrative sources.

For NACE classes including NPISHs, information from the labour accounts is used to assure the population of these NACE classes is covered exhaustively. Because there is a time delay between the occurrence of events (births and deaths) in the trade register and the processing in the SBR the use of exhaustive wage tax data might point at missing units in the SBR. In case a legal unit in the wage tax data cannot be linked to a statistical unit in the SBR, yet its wages will be attributed to a NACE class based on the NACE code of the legal unit. Wage data play an important role in estimating these parts of the economy (see section 3.25).

Maintenance of the Business Register

The SBR contains more than 2 million legal units and is daily updated based on new information on legal units from the trade register. Once the legal unit and its characteristics have been registered, its economic relevance is checked to prevent economically irrelevant legal units from becoming an enterprise group or an enterprise. Two indicators are derived: one that

indicates whether or not the legal unit on itself should lead to an Enterprise Group, regardless of the ownership relations it might have with other legal units, and one that indicates whether it should lead to an enterprise. The algorithm to derive these indicators depends on the following variables: the number of employed persons, the NACE-code (auxiliary or not) and the turnover of the corresponding value added tax unit.

The SBR covers roughly 1.5 million enterprises and nearly as many enterprise groups. The majority of these enterprise groups consist of only one enterprise and only one legal unit. All enterprise groups are derived with automated algorithms, making use of the available information on ownership relationships between legal units.

With the exception of the 1,900 largest enterprise groups, an enterprise as defined in the SBR represents the full enterprise group. This appeared to significantly improve the concordance of administrative units to enterprises. This improved linkage supports the use of administrative data to compile business statistics, which not only reduces the administrative burden on respondents, but also increases the quality as administrative sources provide a much higher (integral) coverage than sample based surveys. Although this may lead to lesser homogeneity of enterprises (the enterprise may be less homogenous than prescribed by the requirements for the Local KAU), the improved linkage between statistical units and administrative sources outweighs this disadvantage.

The 1.900 largest enterprise groups are profiled manually. These enterprise groups are selected using a set of criteria, including the size in terms of employment and balance sheet total, the existence of ownership relations with foreign entities, their impact on statistical outcome, and the diversity of their activities. The profiling exercise leads to the construction of individual enterprises within the enterprise group and determining their characteristics such as NACE and size class. Usually the breakdown into enterprises is done in cooperation with representatives of the enterprise group itself, since it must be assured that respondents are able to report statistical information at enterprise level. In general, the more diverse the production activities inside an enterprise group are, the more enterprises will be distinguished.

For all enterprises and enterprise groups, including those outside the 1.900 manually profiled enterprise groups , it is possible to correct frame errors and change for example the NACE coding of a unit in the register if this turns out to be incorrect.

Each month a population frame is derived from the live register of the Dutch SBR. This frame describes a steady situation of the statistical units, their characteristics and their linkages to the administrative units in order to coordinate populations to produce statistical output or to conduct coordinated surveys. Before the new population frame is made available to users, a macro-validator has to approve all changes caused by the sources and the profilers by judging the impact for the users and take action if necessary. In case further enquiry is necessary, a foreseen change can be postponed by one month or as long as is necessary to gather the required information.

Special Purpose Entities

In the SBR legal units representing special purpose entities (SPE's) are characterized as such by a dedicated sector code. The main source for SPE's is the register for SPE's maintained by the Dutch central bank (DNB), supplied with information from surveys by Statistics Netherlands, mainly the survey on the finances of enterprise groups. Data reported in this survey can lead to the suspicion that a legal unit might be an SPE. The population of SPEs is continuously being coordinated between DNB and SN.

A decision tree indicates the status of a potential SPE candidate. This decision tree is described in detail in annex 3.2. The decision tree addresses the existence of a foreign mother and foreign group companies and makes use of financial statements (balance sheet and the profit & loss account).

Once a legal unit is identified as an SPE, the sector coding in the SBR is adjusted accordingly. Data on SPEs are collected by DNB and provided to Statistics Netherlands to be included in the national accounts (see section 3.18).

The quality of the statistical sources used for the production approach

For most NACE-sections annual data are collected by business surveys, which are described in more detail in section 3.2.2. The structural business statistics (SBS), for which the enterprise is the statistical unit, constitute the main source for the production approach of GDP. The main exceptions, for which no SBS-data are available, are sections A (agriculture with the exception of NACE 016)), K (financial and insurance activities), O (public administration), P (education), the parts of sections Q, R, S and T (health, entertainment and other services). For these sections the business register is currently not used for surveying. The respective sections covering each of these NACE-sections include a description of the data sources used.

For the 350 largest non-financial enterprise groups the data from different surveys are processed by an organizational unit inside Statistics Netherlands dedicated to large and complex enterprise groups, the so called Congo-unit (acronym for consistent observation of large and complex enterprise groups). The aim of the unit is to deliver consistent data on enterprise groups and underlying enterprises for a number of variables, suitable for direct use in subject matter statistics and national accounts.

The data consistency analysis of a particular enterprise group includes nine different statistics and two fiscal sources (see Table 3.2.1). Several consistency rules were formulated in cooperation with the national accounts department. In essence these rules represent a micro level translation of the data balances and inconsistency checks carried out in the SUT at meso and macro level. Consistency rules may be applied at the level of both the enterprise group and the enterprise. Enterprise group estimates should correspond to the sum of individual enterprises within the group taking account of (de)consolidation. Consistency is not only checked for a fixed reference period, but also in time, for example data consistency in relation to short term (monthly, quarterly) and annual statistics. Also the longitudinal development of indicator ratios is analysed as a way to detect outliers or unexpected major events.

The work of the Congo-unit leads to more consistent and complete datasets as input for the various economic statistics, and thus to improved quality and efficiency in the chain of economic statistics, including national accounts. The Congo-unit has especially proven its value added for multinational enterprise groups, for which data inconsistencies appeared to be particularly related to conceptual differences between the various data sources. Conceptual differences are particularly encountered in observing enterprise groups involved in global production arrangements. For these enterprise groups the data from statistics on international trade in goods, based on the cross border concept, tend to be inconsistent with SBS data, in which the principle of economic ownership prevails. In these cases the Congo-unit supplies national accounts with the information which guarantees consistent national accounts estimates based on inconsistent, or conceptually divergent, micro data.

Table 3.2.1 Statistics that are subjected to consistency checks, the statistical unit under examination, and frequency at which the statistics are being compiled

Statistics	***Statistical unit***	***Frequency***
Finances of enterprise groups	Enterprise group	Annual and Quarterly
Structural Business Surveys (SBS)	Enterprise	Annual
Short Term Statistics (STS)	Enterprise	Quarterly or Monthly
Prodcom	Enterprise	Annual
Investment Statistics	Enterprise	Annual
International Trade in Goods	VAT-unit	Monthly
International Trade in Services	Enterprise group or Enterprise	Quarterly
Research & Development Statistics	Enterprise	Annual
Statistics on Employment and Wages	Tax unit for tax on wages	Quarterly
Corporate Tax	Tax unit for corporate tax	Annual
Value Added Tax	VAT-unit	Annual, Quarterly or Monthly

3.2.2 Structural Business Statistics

Coverage of structural business statistics

Structural business statistics cover the following NACE-classes:

016 Support activities to agriculture and post-harvest crop activities
B Mining and quarrying
C Manufacturing
D Electricity, gas, steam and air conditioning supply
E Water supply; sewerage, waste management and remediation activities
F Construction
G Wholesale and retail trade
H Transportation and storage
I Accommodation and food serving
J Information and communication
L Real estate activities (the non-business part of NACE 6820 partly is excluded)
M Other specialised business services
N Renting and other business support
S Other service activities (NACE S94 excluded)
Q Human health and social work activities (parts of NACE 8692, 8810, 8891, 8893)

All size classes (by persons employed) are covered.

Sample design and sample size

The sample survey of Structural business statistics is stratified as follows:

- The enterprises belonging to the 350 largest and most complex enterprise groups are exhaustively surveyed.
- Large and medium sized enterprises (100+ persons employed) that are not part of a Top 350 enterprise group are also exhaustively sampled.
- Sample fractions for other enterprises are derived for each NACE x size class for all enterprises with >=1 person employed.
- Smaller enterprises have sample fractions >0 and <=1. The allocation of the sample survey is optimised for Value Added using a Neyman allocation, optimising on the whole domain level.
- Some NACE x size class combinations are not sampled, since VAT information is used in combination with survey results of a previous year.

The sample size for Structural business statistics varies by NACE code and size class. Table 3.2.2 gives an overview of the sample size and the corresponding total population size for the reference year 2015.

Response rate

The response rate of Structural business statistics varies by NACE code and size class. On average the response rate for 2015 was 64 per cent for enterprises with 4 or less persons employed, 81 per cent for enterprises with 5 to 100 persons employed and 97 per cent for enterprises with more than 100 persons employed.

Types of observation

Structural business statistics are based on an annual sample survey combined with the use of administrative data from the VAT registry. The specific data sources used vary by NACE class, size class of the enterprise and complexity of the enterprises involved:

Table 3.2.2 Population size and sample size for annual structural business statistics 2015

NACE group	Number of employees n											
	n <5			5 <= n < 100			n >= 100			total		
	Popula-tion	sample size	%	Popula-tion	sample size	%	Popula-tion	sample size	%	Popula-tion	sample size	%
Support activities to agriculture	11789	0	0%	1050	211	20%	6	6	100%	12845	217	2%
Mining and quarrying	294	180	61%	89	78	88%	12	12	100%	395	270	68%
Manufacturing	46890	1498	3%	12191	5147	42%	494	494	100%	59575	7139	12%
Electricity, gas, steam and air conditioning supply	876	382	44%	99	99	100%	21	21	100%	996	502	50%
Water supply; sewerage, waste management and remediation activities	1107	119	11%	378	204	54%	35	35	100%	1520	358	24%
Construction	141687	694	0%	9142	3494	38%	129	129	100%	150958	4317	3%
Wholesale and retail trade and repair of motor vehicles and motorcycles	26825	1337	5%	4107	1201	29%	43	43	100%	30975	2581	8%
Wholesale trade, except of motor vehicles and motorcycles	66539	2976	4%	12941	7305	56%	209	209	100%	79689	10490	13%
Retail trade, except of motor vehicles and motorcycles	101176	6473	6%	11846	3182	27%	173	173	100%	113195	9828	9%
Transportation and storage	30354	1924	6%	5525	2535	46%	168	168	100%	36047	4627	13%
Commercial service activities1	454962	14306	3%	34095	11112	33%	684	684	100%	489741	26102	5%
Real estate activities	22846	873	4%	1157	443	38%	6	6	100%	24009	1322	6%
Activities of head offices (NACE 701)	8679	105	1%	509	285	56%	42	42	100%	9230	432	5%
Human health and social work activities	14928	1952	13%	1948	1630	84%	59	59	100%	16935	3641	21%
Total	**928952**	**32819**	**4%**	**95077**	**36926**	**39%**	**2081**	**2081**	**100%**	**1026110**	**71826**	**7%**

Sections I, J, M (excluding NACE 701), N and S

Enterprises part of the 350 largest and most complex enterprise groups

The results of enterprises belonging to a large and complex enterprise groups (the so called Congo enterprise groups) are always collected and estimated using survey data. The enterprises involved are exhaustively sampled provided that the NACE code is within the domain of Structural business statistics. The results of these enterprises have been made consistent with

other data available for these enterprises, such as STS-data and information available on the enterprise group level.

Enterprises not part of the Top 350, survey only

Part of the NACE x size classes covered is also estimated, using survey data only. This is specifically the case for enterprises in NACE classes where VAT data cannot be used in the estimation process (for example: some activities are VAT exempted, which implies that for these activities VAT data cannot be used to estimate the total turnover/production of the specific NACE-group). Larger size classes are covered exhaustively by the SBS-survey, smaller size classes are sampled.

Enterprises not part of the Top 350, survey data combined with VAT data

Part of the NACE x size classes covered is estimated, using survey data and VAT data. In these cases the survey results on the enterprise level are calibrated in the weighing process using VAT information. The exhaustive nature of the VAT data allows for improving the estimates for a NACE class. See scheme 3.2 below.

Enterprises not part of the Top 350, VAT data in combination with survey data of a previous year

Part of the NACE x size classes covered is estimated, using the results of survey data of a previous year combined with VAT data. In these cases total turnover is estimated using VAT information. The results of other variables are derived, using the ratio of these variables in relation to the turnover of previous years. This procedure is applied for the small enterprises (<10 persons employed) in a number of NACE groups.

Enterprises not part of the Top 350, VAT data only

The turnover of the smallest enterprises (mainly enterprises with 0 persons employed, after rounding) is estimated using VAT information only. The other variables are calculated using information from enterprises in a higher size class.

Table 3.2.3 gives an overview of the different types of observations. In annex 3.1 a more detailed overview is given which method was used per NACE x size class combination.

Table 3.2.3 Percentage turnover by type of observation. The column "other survey" comprises the NACE-groups for which only survey data are used as well as those for which survey data are combined with VAT-data

NACE-group	Primarily VAT data		Primarily observations	
	VAT only	VAT and previous year	Top 350	Other Survey
Support activities to agriculture and post-harvest crop activities	3%	41%	0%	56%
Mining and quarrying	0%	0%	88%	12%
Manufacturing	1%	5%	55%	39%
Electricity, gas, steam and air conditioning supply	2%	0%	88%	10%

Water supply; sewerage, waste management and remediation activities	3%	15%	30%	52%
Construction	3%	23%	25%	50%
Wholesale and retail trade and repair of motor vehicles and motorcycles	1%	0%	21%	78%
Wholesale trade, except of motor vehicles and motorcycles	2%	9%	34%	56%
Retail trade, except of motor vehicles and motorcycles	1%	0%	29%	70%
Transportation and storage	3%	1%	34%	62%
Commercial service activities[1]	4%	13%	24%	59%
Activities of head offices	22%	0%	5%	73%
Human health and social work activities	0%	0%	1%	99%
Total	**2%**	**7%**	**38%**	**53%**

Sections I, J, M (excluding NACE 701), N and S

The automated editing process

The survey data received from the responding enterprises are subjected to editing procedures. Automated processes are used for the micro-editing of the various variables. Although the analysis is focussed on a top-down approach, it is very useful to adjust data at a microeconomic level when obvious errors occur. Almost 70 per cent of the survey forms can initially be processed using an automated approach. Eventually part of the automatically edited records still need interactive in editing, but in the end 60 per cent of the total number of response records needs no interactive editing at all.

In the automated editing process for structural business statistics a large number of automated and standardised adjustments are made. The process can be described by the following steps:

- pre-detection;
- pre-adjustment;
- optimised automated editing (SLICE);
- post-adjustment;
- post-detection.

In the pre-detection phase the input data are verified. Records with complex errors are sent to interactive editing. Records that have no or only a limited number of problems follow the automated editing process.

In the pre-adjustment phase, those records are corrected for which a simple solution is available. Common mistakes or missing values in certain variables are adjusted using for example cell averages or previous year data.

In the optimised automated editing process (SLICE) an algorithm is used to correct records adjusting the data only as minimal as possible. This procedure is especially efficient for solving minor inconsistencies.

The post-adjustment phase concerns adjusting mistakes that are still prevalent after the use of SLICE. Certain errors can best be solved after running SLICE.

In the post-detection phase a number of indicators is used to check whether the automatically adjusted record is accepted or should still be edited interactively.

The interactive editing process

The interactive editing process is used for two types of records:

- Records with mistakes that could not be edited automatically.
- Records that were detected and selected after top-down analysis of the results.

In the interactive editing process records are adjusted by a staff member using various sources (additional information obtained by contacting the respondent, previous year data, external information, etc.).

The calculation of NACE totals

Structural business statistics are in principle compiled at NACE 4-digit level. Smaller NACE 4-digit groups are however pooled together into larger NACE activity groups in order to maintain stability of results. The following grossing up method is applied:

- NACE groups for which VAT information is of sufficient quality:

Since enterprises belonging to the 350 largest and most complex enterprise groups are exhaustively sampled, all those enterprises are weighted with a weighing factor equal to 1. Missing values are imputed. For these enterprises no use is made of VAT data.

For other enterprises which are representatively sampled (the larger enterprises) all enterprises are weighted with a weighing factor equal to 1. Missing values are imputed. For NACE-groups for which VAT can be used, the VAT data are used to calibrate the reported data at the enterprise level for turnover and also for all other financial variables.

For enterprises which are not sampled (the middle sized and sometimes small enterprises) all enterprises are weighted using a grossing up algorithm. In this algorithm several data sources are used to calculate grossing up factors:

- the population size
- the number of respondents
- the number of persons employed of every survey and population unit in the business register
- the VAT information of each population unit

A regression model is used to calculate the grossing up factors and population totals. This results in survey totals in consistency with the VAT turnover totals and the number of employed persons as recorded in the business register.

The smaller enterprises are calculated using the VAT totals and variable-to-turnover ratio's from previous years or higher size classes.

Scheme 3.1 Calculation of SBS-totals for NACE – size class combinations covered by a sample survey and with use of VAT-data

To calculate SBS-totals for NACE x size class combinations which are not observed exhaustively in the survey all enterprises are weighted using a grossing up algorithm. In this algorithm several data sources are used to calculate grossing up factors within a specific NACE group:

- The population size and number of respondents are used to calculate the starting weights for the weighing procedure.

- The size class (SC) based on persons employed is used for each enterprise in the survey and for the total populations of the NACE group (5 classes: 1 person employed, 2-4 persons employed, 5-9 persons employed, 10-19 persons employed, 20-49 persons employed).
- The legal form (LF) is used for each enterprise in the survey and for the total population of the NACE group (2 classes: incorporated and non-incorporated enterprises)
- The number of persons employed (PE) is used for each enterprise in the survey and for the total population of the NACE group.
- The turnover (T) is used for each enterprise in the survey. For the entire population of the NACE group the VAT turnover total is available.

The weighing cells are equal to the non-integral part of a NACE group. For a weighing cell the following weighing model is used to calculate the grossing up factors and population totals:

SC (5) + LF(2) + PE + SC(5) x T

The notation above follows a common way of notation for regression modelling. A "+"stands for a combination of auxiliary variables without crossing, a "x" stands for a complete crossing of auxiliary variables.

Applying this weighing model within a NACE group means that the following results are achieved with a minimal adjustment of the starting weights:

- The sum of the weights is equal to the population totals for each of the five size classes.
- The sum of the weights is equal to the population totals for each of the two legal forms.
- The sum of the weighted persons employed is equal to the population totals of persons employed.
- The sum of the weighted turnover is equal to the population total estimate derived from VAT for each of the five size classes.

The result is that for each weighing cell the SBS-totals are consistent with the VAT turnover totals and the total number of persons employed as recorded in the business register.

The results from the grossing up procedure for the non-exhaustively surveyed part and the survey results for the exhaustively surveyed part of a NACE group are added to yield the SBS-totals.

- NACE groups for which VAT information is of insufficient quality:

For these NACE groups a similar approach is followed except that VAT is not used in the estimation process. Missing data for exhaustively sampled enterprises are imputed using data for the previous year, annual reports or NACE size class averages. For smaller enterprises the response data are grossed up using an algorithm that is based on the population size, the number of respondents and the number of persons employed of every survey and population unit.

Totals per NACE 4-digit, the underlying micro data and weighing factors are transmitted to the National Accounts department, where all necessary adjustments are made to meet the definitions and the requirements of the national accounts.

As mentioned above, SBS-totals for the small size classes are estimated using the VAT totals for the reporting year in combination with variable-to-turnover ratio's from previous years and/or higher size classes. During the compilation of the supply and use tables it turned out that an adjustment had to be made to the SBS-data for very small, non-surveyed, enterprises for

which estimates were made using structural data on turnover and costs of the enterprises in the smallest size classes that are surveyed in SBS. Confrontation with the data from the Labour Accounts showed that the estimated value of compensation of employees was found to be too high for the non-surveyed size classes in SBS. Therefore, depending on the NACE-code an adjustment to the SBS-data for production or intermediate use was made. In the process tables for the branches for which SBS-data are used, this adjustment is included under data validation. Note that this column may also include other data validation adjustments.

3.3 The borderline cases

Usually the delineation of output, intermediate consumption and gross fixed capital formation is straightforward, there are however a number of borderline cases which are discussed in this section.

Production

In Chapter 5 information is provided on own-account gross fixed capital formation (GFCF) estimates of those asset types which remain expectedly uncovered by SBS, for example mineral exploration, entertainment, literary and artistic originals, software and research and development. These supplementary data compilation must be added to SBS-output.

Further, own-account production of agricultural products by households must be included in the estimates of output. This output solely for own final consumption in kitchen gardens remains unobserved in agricultural statistics. Consequently an additional estimate is made for this own-account output of agricultural products which is based on the allotment area in hectares and an anticipated average output per hectare (see also section 3.8).

Estimates of dwelling services produced by owner-occupiers are derived from information on renting values of corresponding dwellings occupied by tenants. A stratification method, i.e. a linear regression between rental values and characteristics of dwellings, is used (details are found in Section 3.19).

NACE section T includes the household services produced by employing paid domestic staff. These are services provided by e.g. butlers or private nurses. The size of these services is quite small (4 million euros). Corresponding estimates are derived from the Labour Accounts which are based on administrative data on wage tax declarations. Furthermore care bought by personal budgets provided by the government (PGB) is included in this section as well. In the Netherlands disabled people are, under certain conditions, entitled to personal budgets for purchasing various forms of individual care services.

Services like housecleaning and babysitting are considered to be produced by self-employed persons. Therefore, they are not included in section T but instead in the NACE section of the corresponding services.

Activities undertaken by volunteers resulting in goods merely consists of GFCF in buildings (churches, sports accommodation). However nowadays such activities are rare in the Netherlands and therefore judged as negligible. Most voluntary activities in e.g. amateur sports clubs, religious organisations, political parties, will result in the output of services.

Output used for payments in kind is accounted for in relation to access granted by transport enterprises to their employees of to travel for free or at reduced prices, and for employees of financial institutions who are granted loans against interest rates below market rates.

For products bartered no additional estimates are made. These transactions hardly occur in the Dutch economy.

No supplementary estimates are required for products supplied by one KAU to another within the same institutional unit. The KAU is the unit of observation for business statistics and intra company transactions are included in output and intermediate consumption in the survey data.

The output in relation to growth of multi-annual plantations and livestock is gradually spread over time and is not solely recorded at the moment of harvest or slaughtering. The methods used are according to recommendations in the Agricultural and Forestry Accounts Handbook (See Section 3.8.1. for further details).

Intermediate consumption

In ESA 2010 the delineation of intermediate consumption in relation to gross fixed capital formation (GFCF) can differ from bookkeeping practices. Expenses which can be recorded as current costs in bookkeeping like expenses on valuables, mineral exploration, major repairs and improvements, software, research and development have to be excluded from intermediate consumption as they are part of GFCF in ESA 2010. Expenditure to be treated as the purchase of non-produced assets, e.g. long-term contracts, leases and licenses must be excluded from intermediate consumption as well. This also holds for (part of) expenditure by employers in favour of their employees which must be recorded as wages and salaries in kind, payments for government licenses and fees that must be recorded as other taxes on production, and payments for licences for using natural resources (e.g. land) to be recorded as rents. Based on SBS data in combination with additional sources (wage tax data) and assumptions, estimates are made for the required adjustments of intermediate consumption, wages, other taxes on production and property income.

In business statistics, as well as in financial and governmental reports, the items “costs of using rented fixed assets”, “inexpensive tools”, “subscriptions”, “goods and services used as inputs into ancillary activities”, “contributions and dues paid to non-profit business associations” and “expenditure by employees reimbursed by the employer” will always be covered, perhaps not explicitly. These items will be recorded in various other aggregated cost items such as ‘office needs’, ‘costs of transport, ‘sales costs’. For non-life insurance data sources from the Dutch Central Bank will cover insurance premiums paid. In the translation of this data to NA-definitions, the premiums paid are transformed into the output of insurance service charges (see also Section 3.5).

Information on R&D purchases is obtained from business statistics as well as from dedicated R&D surveys. Only R&D services purchased by entities in the R&D industry (NACE 72) are being recorded as intermediate consumption. All other domestic R&D purchases are recorded as GFCF.

Intermediate consumption is adjusted for wages in kind such as the private use of a company car, meals and drinks provide to employees, etc. The required estimates are partly based on tax information and partly on assumptions concerning specific items in intermediate consumption as observed in business statistics. For those branches not covered by business statistics amounts per employee are used to estimate wages in kind.

In general SBS statistics provide rather detailed information on the intermediate consumption of enterprises. However, the more general cost items are often more aggregated and do not necessarily match with the classification of goods and services found in the supply and use table. Also data obtained from bookkeeping records of enterprises are sometimes not detailed

enough to match with the requirements of the SUT. In such cases a breakdown of these aggregates is made according to the classification of goods and services in the supply and use table. These aggregates may also include other taxes on production. The breakdown of aggregated survey response items may therefore also result in transaction reclassifications, in this case from intermediate consumption to value added.

As already stated in the section on borderline cases in production, no additional estimates are needed for items of intermediate consumption obtained via intragroup deliveries. Intra company transactions are included in output and intermediate consumption variables as obtained from business surveys.

Fisim is allocated to intermediate consumption in a two stage procedure. On the level of institutional sectors fisim is allocated using balance sheet information. As the latter is not available at industry level the allocation to industries is, in conformity with the international guidelines based on total industry output and corresponding institutional sector totals for fisim consumption.

Borderline cases related to taxes and subsidies on products are explained in Sections 3.29 and 3.30.

3.4 Valuation

The Dutch supply use system is balanced at purchasers' prices excluding VAT. Chapter 6 provides an overview of the Dutch SUT framework including its valuation principles. Domestic output is valued according to three kinds of prices:

- Purchasers' prices including VAT;
- Purchasers' prices excluding VAT;
- Basic prices.

The purchasers' price is the price of a product as paid by the purchaser. In theory all transactions are including VAT, however many producers are allowed to deduct VAT from purchases on both intermediate consumption and gross fixed capital formation. Those producers are actually paying a purchasers' price excluding VAT. The basic price is the amount that results after deduction of trade and transport margins and taxes less subsidies on products from the purchasers' price and is in fact the revenue for the producer. For imports the c.i.f.-price (price at the Dutch border, see chapter 5 for more details) replaces the basic price.

As already explained the producer of a product will usually receive a price below the purchasers' price as the latter will included wholesale, retail trade and transport margins. These services may be provided by other parties than the goods producer. Deducting trade and transport margins and non-deductible VAT from the purchasers' price results in the so called producers' price. Producers' prices are mostly reported in business statistics and in administrative VAT-data.

The producer may have to invoice taxes on products (such as excises) or will be receiving subsidies on products. The remaining price, is the so-called basic price which is the actual price received by the producer.

The schemes below provide an overview of how the various prices are linked together.

Valuation types of domestic output

purchasers' price including VAT
minus VAT
= purchasers' price excluding VAT
    minus: trade and transport margins
= producers' price
    minus: taxes on products paid
    plus: subsidies on products received
= basic price

Valuation types of imported products

purchasers' price including VAT
minus VAT
= purchasers' price excluding VAT
    minus: trade and transport margins in the Netherlands
    minus: taxes on imports
    plus: subsidies on re-exports
= cif-price

The valuation of various macroeconomic variables is in more detail discussed below.

Output (basic prices)

In the Dutch supply and use tables output is valued at basic prices. Data on output at basic prices are often not directly available from source statistics as mostly output at producers' prices is reported. Based on Structural Business Statistics (SBS) output at basic prices is calculated using output at producers' prices and data on and taxes less subsidies on products which are separately reported in the surveys.

Output at producers' price
minus: taxes on products paid
plus: subsidies on products received
= output at basic prices

These figures are assumed to be consistent on the level of the unit of observation, implying that taxes and subsidies on products are directly subtracted/added respectively in order to arrive at output at basic prices. Any differences between the SBS and government taxes and subsidies on products will be part of output at purchasers' prices (excl. VAT) as recorded in the SUT.

The scope of taxes and subsidies on products in this calculation process reported in SBS and the scope of taxes and subsidies on products from government accounts are the same.

In general output estimates based on SBS-data are derived as sum of turnover, changes in inventories and own account GFCF. A well-known exception is the output of trade as derived from the measurement of trade margins. Nevertheless in some cases adjustments have to be made in relation to goods sent for processing (adding only the processing fee to output), production abroad and divergent judgements of change in ownership in relation to global production arrangements. Next to turnover SBS contains an item 'Other revenues' which include among other things royalties, rental of buildings which are part of output in the NA.

Special cases:

Trade is the distribution of goods in time and space without any physical transformation. So, trade services are produced in relation to goods (not services). The value of trade services (the so-called trade margins) is the difference between the value of sales and the value of purchases for resale.

Real estate activities not only include services of non-residential buildings and rented dwellings, but also imputed services of owner-occupied dwellings. The latter are valued on the basis of rents of comparable rented dwellings.

Banking mainly deals with financial intermediation, i.e. the acquisition, transformation and issuing of financial assets. The compensation for these services is implicitly included in the interest paid to and received from banks. Imputed bank services (FISIM) are estimated based on balance sheet data from the institutional sector accounts and interest rates, including a reference rate. Furthermore, banks produce fees and commissions on financial transactions and payments for services such as the use of pin passes, i.e. services for which clients pay explicitly.

Insurance and pension funding mainly transforms individual risk into collective risk. The value of these services of non-life insurance companies is set as the difference between premiums earned (including implicit premium supplements) and adjusted claims incurred. In the case of pension funds and life insurance companies the value of these services equals the sum of production costs plus an allowance for normal profit of life insurance companies.

Government mainly produces non market services, both collective and individual (services directly provided to individuals such as education). Since no market prices available, government output is determined as sum of costs of intermediate consumption, compensation of employees, consumption of fixed capital and the balance of other taxes and subsidies on production paid/received by the government itself.

Non-profit institutions serving households are non-market producers. The value of their output is determined as sum of costs, similar to government output.

Intermediate consumption (purchasers' prices excluding VAT)

Intermediate consumption consists of goods and services transformed into other goods or services and used up entirely in the course of the production process. According to international standards an acquired good or service is classified as a fixed asset rather than intermediate consumption when it lasts in a production process over one year. Goods and services that are part of intermediate consumption are valued at market prices at the time they are used.

The accrual principle is followed in the valuation of intermediate consumption (intermediate consumption be recorded and valued when it enters the production process). Revaluation adjustments are only made for products in between different accounting periods. Within one

accounting period no adjustments are made for revaluation. See for detailed information on this subject section 5.12.

Adjustments made to render changes in inventories are consistent with the valuation of intermediate consumption. So changes in inventories of materials are deducted from purchases of materials intended to be used as inputs in the calculation of intermediate consumption.

As most producers are allowed to deduct VAT from their purchases, the valuation of the Dutch use table is purchasers' prices excluding VAT in order to obtain a homogeneous valuation for all entries. This implies that data on intermediate consumption linked to VAT-exempted activities have to be adjusted to arrive at purchasers' prices excluding VAT. Most important examples of exempted activities are government, health and financial services. Based on intermediate consumption data detailed by product group the prevailing VAT-rates of individual product groups are applied in order to arrive at the required valuation. Non-deductible VAT is included in the SUT in a separate row entry in the use table.

Taxes on products

Taxes on products are taxes payable per unit of a given good or service produced or imported. The tax may be a specific amount of money per quantity unit of a good or service, or may be calculated as a specified percentage of the price per unit or value of the goods and services produced or traded. Taxes on products are a column entry in the supply table bridging the gap between the basic/cif prices in the supply table and the purchasers' price excluding VAT as found in the use table. See for more information on tax related issues section 3.29.

Subsidies on products

Subsidies on products are subsidies receivable per unit of a good or service produced or imported. The subsidies are related to the value or volume of product. Subsidies on products are part of the supply table in order to bridge the gap between the basic/cif prices of the supply table and the purchasers' price excluding VAT of the use table. See for more information on subsidy related valuation issues section 3.30.

Products produced for own final use

The scheme below shows the valuation method for the various products produced for own final use.

Valuation of products for own final use

Gross fixed capital formation of market producers	Valuation
SBS-data own account GFCF	Basic prices assumed
Software	Model approach, implicit mark up
R&D	Sum of costs plus mark up
Originals	Based on royalties, basic prices assumed
Cultivated biological resources	Balance sheet information, basic prices assumed
own account construction of dwellings	sum of costs
Gross fixed capital formation of non-market producers	**Valuation**
Software	sum of costs
R&D	Sum of costs
Other	Sum of costs
Consumption of households	**Valuation**
Imputed rent of owner occupied dwellings	Basic prices
Agricultural products	Basic prices (auction prices)
Use of public transport by own employees of transport companies	Valuation not explicitly adressed
Discounts with financial institutions	Basic prices

3.5 Transition from private accounting and administrative concepts to ESA 2010 national accounting concepts

A number of ESA 2010 concepts are defined differently compared to business accounts. A well-known example is the concept of 'depreciation' versus consumption of fixed capital. In business accounting various methods for the calculation of depreciation are applied and may differ from enterprise to enterprise. Since this incomparability is undesirable from a national accounts point of view, a harmonised method for the calculation of the consumption of fixed capital is applied for all industries. Consumption of fixed capital is determined with reference to historical series of fixed capital formation using the perpetual inventory method (PIM). For more detail see section 4.13.

In order to comply with ESA 2010 concepts is it necessary to depart from the registration normally adopted in business accounting. Next to consumption of fixed capital this concerns the delineation of intermediate consumption and GFCF for items such as R&D, software and the recording of inventories. The valuation of inventories in business accounting and SBS will generally not be strictly in line with the ESA2010 requirements and adjustments have to be made for the revaluation part of observed changes (see section 5.12). The revaluation has an impact on the estimate of intermediate consumption.

Software, entertainment, literary and artistic originals and R&D related expenditure is frequently recorded as intermediate costs in business accounts instead of GFCG as required in NA. In responding on questionnaires the business accounting way of recording of these items will generally be followed. In ESA 2010 these types of expenditure must be classified as gross fixed capital formation. As a consequence in the transition from business statistics to national accounts the total intermediate consumption will decrease with the amount reclassified to gross fixed capital formation. This will result in a corresponding increase of value added. It is assumed that expenses on small tools which are recorded as current costs in business accounting all concern tools for general use and are therefore, in conformity with ESA 2010, also in the NA recorded as intermediate consumption.

Although it could be argued that the delineation of intermediate consumption and GFCF concerning maintenance and repair of buildings in bookkeeping differs from ESA2010

requirements , no adjustments are made in the processing of SBS-data for NA-purposes. For the initial estimates it is assumed that the SBS-data fulfil the requirements of ESA2010. In the balancing of the supply and use of repair and maintenance of buildings (other than dwellings) the definite distinction between intermediate consumption and GFCF is being determined.

For leasing, businesses accounts record operational lease as intermediate use and financial lease as GFCF, so for this item no adjustments on business accounts data are required. For “insurance service charges”, “fisim” and “spreads”, business accounts need to be adjusted as they record premiums paid for insurance and do not know fisim or spreads at all. In section 3.18 output of “insurance service charge”, “fisim” and “spreads” is discussed. Estimated amounts for intermediate use of fisim and spreads are added to intermediate consumption, which will reduce value added at industry branch level.

As said above business statistics will record insurance premiums paid but not the insurance service according to ESA 2010. As explained in section 3.18, for non-life insurance the ratio between the insurance service and the insurance premium (excluding health insurance) is about 33 per cent. Including taxes on insurance premiums, this ratio is about 43 per cent. It is assumed that this ratio applies to all industries. Therefore, for all industries, an adjustment of 57 per cent of the insurance premium is made to arrive at intermediate consumption of insurance services. However, information on insurance premiums payable are not necessarily available from business statistics. Related expenses are often included in generic cost categories such as “housing costs” or “other costs of personnel”.

Therefore, when no directly observed data for insurance premiums are available (outside agriculture, financial institutions and parts of the transport industry), a small percentage of “costs of transport equipment”, “housing costs”, “other costs of personnel” and “costs of sales” is attributed to insurance premiums. These percentages are chosen in such manner that on macro level the insurance premiums that are calculated in this way are approximately equal to the paid insurance premiums from the insurance service industry. To arrive at the insurance services, premiums paid are multiplied with 0.57.

In the business statistics outsourced transportation costs are included in sales and intermediate costs. In the Dutch national accounts, these costs are not considered to be part of output in basic prices of the concerning industry, but instead recorded as transport margins. Business statistics provide information about the outsourced transportation costs. These costs are deducted from intermediate consumption for all activity groups separately. Subsequently, the same amount is deducted from turnover. The adjustment is distributed over the turnover by type of goods.

Business accounts do not know the concept of value added. In these accounts, costs are grouped together irrespective of whether national accountants considers these costs as intermediate consumption or as value added components. Large costs (wages and salaries, materials and supplies) can directly be attributed to either intermediate consumption or value added. Some cost categories will however include both intermediate consumption and value added components. “Other cost of personnel” mainly consists of intermediate costs, but it will also include wages for a small part (gift cards). Likewise, some taxes on production will be included in cost categories like “housing cost” and “other cost”. Therefore, adjustments are made between intermediate consumption and value added to include these cost in value added.

For some producers of VAT-exempted services, data sources exclude the VAT that they have to pay on their intermediate consumption. For these producers, the VAT that they should (theoretically) pay is calculated, based on the VAT tariffs of the goods and services they use. Section 7.2.3.5 provides more information about the actual calculation of the theoretical VAT.

In the Dutch national accounts opening and closing balances of inventories are adjusted for holding gains and losses to accurately measure changes in inventories. This is done for the inventories of finished goods, materials and supplies and goods for resale. Holding gains and losses are also removed from production and intermediate use. In section 5.12, changes in inventories, the method to calculate holding gains is described.

In table 3.5.1 the size of various conceptual adjustments is given as distinguished in this section: the "allocation of FISIM", the "other conceptual adjustments", "R&D", "software", "outsourced transportation", "insurance services", "other transfers" and "other". Other transfers mainly consist of the transfer of other taxes and subsidies on production from costs items in SBS to value added. The main adjustment in "other" concerns insurance services provided to the government because of the obligatory health insurance (see section 3.22 of the inventory). Also included in "other" are the corrections made to output (+346 million euro) and intermediate consumption (-148 million euro) for holding gains and losses.

Table 3.5.1. Summary table of the total of conceptual adjustments in the transition from bookkeeping to ESA 2010 concepts, 2015, million euros.

	Allocation of FISIM	Other conceptual	R&D	Software	Outsourced transportation	Insurance services	Other transfers of receipts and costs to VA	Other
	(1)		(2)	(3)	(4)	(5)	(6)	(7)
Output	3.888	4.769	973	4.233	-4.121	-5	0	3.689
Intermediate cons.	39.073	-29.296	-5.100	-9.134	-4.121	-3.616	-11.881	4.556
Value added	-35.185	34.065	6.073	13.367	0	3.611	11.881	-867

3.6 The roles of direct and indirect estimation methods and of benchmarks and extrapolations

Ideally estimation methods based on direct observation are available for all relevant items of the SUT. Alternatively, in the absence of such statistical sources, estimates must be based upon indirect estimation methods, such as models. The items listed below are estimated, using indirect estimation methods, sometimes combined with statistical sources. The references between brackets refer to the sections providing more details on the applied models. The list below comprises the most important items for which estimation models were applied. For industries where an additional estimation model was used, this will be described in the specific sections.

- Fisim (section 3.18)
- Spreads (section 3.18)
- Consumption of Gross Fixed Capital (section 4.14)
- Other financial services (section 3.18)
- Imputed rents of owner occupied dwellings (section 3.19)
- Intermediate use for leasing dwellings and enterprise buildings (section 3.19)
- Other services (NACE 87-96, section 3.25 and 3.26)
- Government non-market output in other manufacturing, research and development, and activities of membership organisations (section 3.10, 3.20 and 3.26)
- Insurance services (section 3.5 and 3.18)
- Black economy (section 3.7 and 7.2.3)
- Illegal economy (section 3.7 and 7.2.3)
- Wages in kind (section 3.7 and 7.2.3)
- Cost fraud (section 3.7 and 7.2.3)

- Holding gains (section 3.5 and 5.12)
- Elimination of the VAT gap (section 7.2.3.4)

In general, the models are (re)calculated or estimated for each reporting year and the models result in plausible estimates for the resulting variables. Assumptions underlying these models are reviewed regularly, at least in every benchmark revision (i.e. at five year frequency). When models cannot be (re)calculated annually, additional extrapolation techniques will lead to estimates for subsequent years.

Table 3.6.1 shows in which NACE, rev. 2 sections, and the extent to which, indirect methods are used.

Agricultural statistics are largely based on estimates of volume data (observed and harvest estimates) multiplied by (observed) prices. Estimates for manufacturing and construction are likewise largely based on observed data (business statistics), although in a number of cases only administrative data (VAT) are available for the smallest units.

With respect to services both direct and indirect estimation are being applied. Direct estimates mainly rely on business statistics and cost and financing data. Indirect estimates refer to several types of price and volume (including labour) data. Broadly speaking, business statistics are available for the trade, hotel and catering industries, transport and business services. Cost and financing statistics are available for health and social service estimates. Price, volume and labour data are used both for estimates of other services, owner-occupied dwellings and some supplementary estimates.

Government data are obtained from the State accounts. Data in respect of financial corporations are obtained from the Dutch Central Bank (DNB) and annual reports.

Table 3.6.1 the use of indirect methods in the production approach of the GDP, 2015 (million euros)

Compilation of GNI	Level of Details	Basis for NA Figures											
					Extrapolation and Models								
		Surveys & Censuses	Administrative Records	Combined Data	Benchmark extrapolations	Commodity Flow Model	CFC(PIM)	Dwellings - stratification method	FISIM	Other E&M	Total Extrap+Models	Other	Total (sources)
	A	Agriculture, forestry and fishing											
Output of goods and services (at basic prices)		4542		26698									31240
Intermediate consumption (at purchasers' prices)		2712		17245									19957
Gross value added (at basic prices)		1830		9453									11283
	B	Mining and quarrying											
Output of goods and services (at basic prices)		17732											17732
Intermediate consumption (at purchasers' prices)		5872											5872
Gross value added (at basic prices)		11860											11860
	C	Manufacturing											
Output of goods and services (at basic prices)		298339								82	82		298421
Intermediate consumption (at purchasers' prices)		231917											231917
Gross value added (at basic prices)		66422								82	82		66504
	D	Electricity, gas, steam and air conditioning supply											
Output of goods and services (at basic prices)		17872											17872
Intermediate consumption (at purchasers' prices)		10710											10710
Gross value added (at basic prices)		7162											7162
	E	Water supply; sewerage, waste management and remediation activities											
Output of goods and services (at basic prices)		9622		287									9909
Intermediate consumption (at purchasers' prices)		6083		210									6293
Gross value added (at basic prices)		3539		77									3616
	F	Construction											
Output of goods and services (at basic prices)		83086											83086
Intermediate consumption (at purchasers' prices)		57780											57780
Gross value added (at basic prices)		25306											25306
	G	Wholesale and retail trade; repair of motor vehicles and motorcycles											
Output of goods and services (at basic prices)		149323											149323
Intermediate consumption (at purchasers' prices)		73457											73457
Gross value added (at basic prices)		75866											75866
	H	Transportation and storage											
Output of goods and services (at basic prices)		81741											81741
Intermediate consumption (at purchasers' prices)		52888											52888
Gross value added (at basic prices)		28853											28853
	I	Accommodation and food service activities											
Output of goods and services (at basic prices)		22911											22911
Intermediate consumption (at purchasers' prices)		12714											12714
Gross value added (at basic prices)		10197											10197
	J	Information and communication											
Output of goods and services (at basic prices)		56393											56393
Intermediate consumption (at purchasers' prices)		29831											29831
Gross value added (at basic prices)		26562											26562
	K	Financial and insurance activities											
Output of goods and services (at basic prices)				34238					36160	8240	44400		78638
Intermediate consumption (at purchasers' prices)				27433						3543	3543		30976
Gross value added (at basic prices)				6805					36160	4697	40857		47662
	L	Real estate activities											
Output of goods and services (at basic prices)		9657		15252				47753		10608	58361		83270
Intermediate consumption (at purchasers' prices)		3664		5850				7719		2572	10291		19805
Gross value added (at basic prices)		5993		9402				40034		8036	48070		63465
	M	Professional, scientific and technical activities											
Output of goods and services (at basic prices)		93907		3854						232	232		97993
Intermediate consumption (at purchasers' prices)		51801		351									52152
Gross value added (at basic prices)		42106		3503						232	232		45841
	N	Administrative and support service activities											
Output of goods and services (at basic prices)		62315		120									62435
Intermediate consumption (at purchasers' prices)		34494		34									34528
Gross value added (at basic prices)		27821		86									27907
	O	Public administration and defence; compulsory social security											
Output of goods and services (at basic prices)				75383									75383
Intermediate consumption (at purchasers' prices)				31445									31445
Gross value added (at basic prices)				43938									43938
	P	Education											
Output of goods and services (at basic prices)				40090									40090
Intermediate consumption (at purchasers' prices)				9920									9920
Gross value added (at basic prices)				30170									30170
	Q	Human health and social work activities											
Output of goods and services (at basic prices)				81400									81400
Intermediate consumption (at purchasers' prices)				26390									26390
Gross value added (at basic prices)				55010									55010
	R	Arts, entertainment and recreation											
Output of goods and services (at basic prices)				14346									14346
Intermediate consumption (at purchasers' prices)				8048									8048
Gross value added (at basic prices)				6298									6298
	S	Other service activities											
Output of goods and services (at basic prices)		5312		6282						234	234		11828
Intermediate consumption (at purchasers' prices)		2602		2823									5425
Gross value added (at basic prices)		2710		3459						234	234		6403
	T	Activities of households as employers; undifferentiated goods- and services- producing activities of households for own use											
Output of goods and services (at basic prices)				532									532
Intermediate consumption (at purchasers' prices)													
Gross value added (at basic prices)				532									532

3.7 The main approaches taken with respect to exhaustiveness

Chapter 7 discusses in detail the information used and methods applied to ensure exhaustiveness. In this section provides a brief description of the most significant items.

Wages in kind

Most business accounts, and therefore business statistics, classify certain types of expenditure as intermediate costs, whereas these must be reported under wages and salaries in the national accounts. This concerns company-car use, preferential banking and insurance interest and subsidised travel for transport-company employees. As a consequence (1) output is upwardly adjusted to include these employee benefits in kind and (2) intermediate consumption is downwardly adjusted due to reclassifying certain expenditure items as wages and salaries.

Cost fraud

In the 2015 revision, adjustments were made for cost fraud, which is assumed to occur only in small enterprises. Downward adjustments in intermediate consumption were made for enterprises with less than 10 employees in those business categories in which substantial cost fraud was suspected.

White spaces and black and illegal activities

Data according to business statistics are not always exhaustive from a national accounts viewpoint. For example, respondents will not take their 'hidden' and illegal activities into account when completing their business statistics questionnaires. In addition to these hidden and illegal activities, the source statistics also do not include certain regular activities (white spots), for example activities of households falling within the production boundary of the national accounts, such as the construction of an own house. Additional estimates are made to cover the hidden economy and illegal activities.

Summary table

Section 7.2 provides an overview of those adjustments made for different types of non-exhaustiveness in the production approach. In the 2015 benchmark, for the first time estimates are included for own account energy production by households, for renting of dwellings through internet platforms (for example AirBnB), and for the elimination of the VAT gap. Furthermore, the elimination of double counting of agricultural output is included as an adjustment for exhaustiveness instead of as an adjustment due to data validation. According to the tabular approach as defined by Eurostat, the estimates for exhaustiveness are as much as possible classified by N-classes. This disaggregation is however not straightforward as several N-classes seem to overlap. The result of the disaggregation for the total of all branches of industry is shown in Table 3.7.1.

The estimate for exhaustiveness is divided into the classes N1 (underground production), N2 (illegal production, drugs, smuggling), N3 (producer is not obliged to register), N6 (cost fraud) and N7 (income in kind).

Table 3.7.1 Estimates for exhaustiveness in the production approach, disaggregated by N-classes, 2015 (million euros)

	Exhaustiveness							
	N1	N2	N3	N4	N5	N6	N7/8	Total exhaustiveness
Output of goods and services (at basic prices)	4564	5850	1127	0	0	0	-1681	9860
Intermediate consumption (at purchasers' prices)	913	1089	208	0	0	-1733	-6196	-5719
Gross value added (at basic prices)	3651	4761	919	0	0	1733	4515	15579

Activities mostly contributing to value added are income in kind (5.027 million euro, N7), cannabis (2.916 million euro, N2), cleaning houses and buildings (1.337 million euro, N1), removal of the VAT gap (970 million euro, N6) and house renovations and maintenance (742 million euro, N1). Relatively important branches of industry in the field of non-exhaustiveness are Manufacturing (additional value added estimate of 2.867 million euro) and Trade (additional value added estimate 2.647 million euro).

3.8 Agriculture, forestry and fishing (NACE Rev.2 Section A)

Table 3.8.1 Process table of output, intermediate consumption and value added of agriculture, hunting, forestry and fishing (section A), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	4.542	0	26.698	0	0	31.240	-429	28	-541	61	30.359
Intermediate cons.	2.712	0	17.245	0	0	19.957	-417	-356	-728	5	18.461
Value added	1.830	0	9.453	0	0	11.283	-12	384	187	56	11.898

(1) Surveys & censuses

Production, intermediate consumption and value added for Agricultural services (SIC 016) are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(3) Combined data

For the growing of crops, market gardening, horticulture and the farming of animals, functional (product based) estimates rather than institutional (industry based) estimates were made by combining exhaustive data from surveys, administrative records, and commodity flow models, see section 3.8.1. For forestry and forestry services, data were obtained from the forestry accounting network and the annual national forestry management report, see section 3.8.2. For fishing data were obtained from shipping registry accounts, see section 3.8.3.

(7) Data validation

The largest adjustments were made in SIC 01 Agriculture and hunting, see section 3.8.1

(8) Conceptual

As described in section 3.5. adjustment have been made for fisim, software, R&D, insurance services and outsourced transportation activities.

(9) Exhaustiveness

The largest adjustment were made in SIC 016 Agricultural services for double counting growing crops and horticulture. In addition, own-account production by non-farming households requires a separate estimate. For more details, see section 3.8.1. Furthermore, adjustments have been made for cost fraud and income in kind (cf. section 3.7).

(10) Balancing

The largest adjustments were made in SIC 01 Agriculture and hunting, see section 3.8.1.

The agriculture, hunting, forestry and fishing industry is divided into agriculture and hunting (SIC 01), forestry (SIC 02) and fishing (SIC 03) . The estimation of output, intermediate consumption and gross value added (at basic prices) of these SICs is described in detail in sections 3.8.1 and 3.8.2. and 3.8.3.

3.8.1 Agriculture and hunting (SIC 01)

Table 3.8.2 Output, intermediate consumption and value added of agriculture and hunting (SIC 01), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	4.542	0	25.943	0	0	30.485	-429	20	-541	59	29.594
Intermediate cons.	2.712	0	16.897	0	0	19.609	-417	-355	-726	6	18.117
Value added	1.830	0	9.046	0	0	10.876	-12	375	185	53	11.477

(1) Surveys & censuses

Production, intermediate consumption and value added for Agricultural services (SIC 016) are based on the structural business statistics (SBS). For more general information on SBS and for specific methods per size class, see section 3.2.2.

(3) Combined data

For the growing of crops, market gardening, horticulture and the farming of animals, functional estimates (product based) rather than institutional (industry based) estimates were made by combining exhaustive data from surveys, administrative records, and commodity flow models.

(7) Data validation

A significant adjustment was made for two large companies in SBS for SIC 016 Agricultural services. A part of output and intermediate consumption is related to trade activities rather than industrial activities. A substantial negative adjustment has been made to comply with the concept of trade margins.

(8) Conceptual

As described in section 3.5. adjustment have been made for fisim, software, R&D, insurance services and outsourced transportation activities.

(9) Exhaustiveness

The largest adjustment were made in SIC 016 Agricultural services for double counting growing crops and horticulture. Growing crops and horticulture are already estimated in the functional estimates for SIC 011- 014.

In addition, own-account production by non-farming households requires a separate estimate. A negative adjustment was made for the inputs of cannabis production to avoid double counting. This illegal activity is recorded in the tobacco industry, but the assumption is made that part of the inputs in cannabis production are also partly included in the source information and (initial) estimates of agriculture. The latter as a consequence of using commodity flow methods to estimate a substantial part of intermediate consumption in agriculture.

Furthermore adjustment were made for cost fraud and income in kind (cf. section 3.7).

(10) Balancing

Balancing did not lead to substantial adjustment in this industry. During the balancing process a number of products supplied and used was adjusted. Some adjustment were made to production and some minor adjustments were made to intermediate consumption. Overall these adjustments resulted in a positive adjustment of output, and a positive adjustment of intermediate consumption.

Further information

Agriculture and hunting (SIC 01) comprises the following sub-groups:

- growing of non-perennial crops (SIC 011);
- growing of perennial crops (SIC 012);
- plant propagation (SIC 013);
- animal production (SIC 014);
- mixed farming (SIC 015);
- support activities to agriculture and post-harvest crop activities (SIC 016);
- hunting, trapping and related service activities (SIC 017).

Agriculture (SIC 011 – 016)

Estimates of agricultural output, intermediate consumption and value added are largely functional. This implies that most estimates of farming/horticulture and stockbreeding are based on product data irrespective of the actual producer as opposed to institutional information which is based on data from business units (industry) irrespective of what these units produce. Structural business statistics (SBS), used to estimate agricultural services (SIC 016), are an example of an institutional data source. Functional estimates are unavoidable in most agricultural areas due to the absence of comprehensive and reliable institutional sources. On the other hand the available functional sources provide exhaustive and high-quality information. The functional estimation method used for certain areas of agriculture has implications for the description of other economic activities in national accounts. For example, stockbreeding undertaken by fodder producers is not classified as a subsidiary activity of the fodder industry, but as stockbreeding in agriculture.

In addition to the functional estimates for agricultural products, estimates are made for a number of side activities directly related to agriculture like cheese production, leasing of agricultural machinery and agri-tourism.

Most agricultural products are sold to the food industry. The estimation of agricultural output is thus closely linked to estimates of intermediate consumption of the food industry, which covers:

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

Exports constitute another major sales category.

A commodity flow method is used to estimate output for these products. For example the supply of raw milk to the dairy industry minus the import plus the export is the output of raw milk in the agricultural industry (stock changes of raw milk do not occur).

The relationship between agriculture and the food industry can sometimes be reversed, most notably in the case of large-scale fodder industry supplies to agriculture. In these cases the output information of the fodder industry gathered in SBS determines intermediate inputs in agriculture.

The interconnection between agriculture and food industry generates a lot of information giving raise to detailed and simultaneous estimation procedures. Highly detailed price and volume data provided by the Netherlands Enterprise Agency (NEA) are important inputs in the estimation process. The same data are additionally to SBS used for estimates of food processing industry, see section 3.10.1. Because of the interaction in estimating agriculture and food processing the following aspects have to be taken into account:

- Many enterprises in agriculture and food processing base their operations on a financial year which is linked to the natural cycle of agricultural production. As a consequence information in business statistics (SBS) of food processing does not always correspond to calendar years of the NA and therefore have to be adjusted. Additional (functional) data are required for this purpose;
- Subsidies and levies on (finished) products used and sold by the economic agents must be appropriately recorded in the national accounts, as valuation of output must be basic prices and of intermediate consumption purchasers' prices excluding VAT. It is however not always possible to identify subsidies and levies on individual products from statistics on sales and purchases for intermediate consumption, as some of those subsidies and levies are actually received and paid for by wholesalers. The production data are adjusted in order to get output at basic prices. In practice, subsidies and levies on products are (functionally) recorded for individual products.

In the Netherlands, agriculture is subject to simultaneous estimation in the context of national accounts and agricultural accounts. The latter are an offshoot of national accounts, providing supplementary data and using specific agricultural concepts, which are described in the handbook 'Agricultural and Forestry Accounts (rev. 1.1)'. The concepts of the Agricultural and Forestry Accounts are nearly the same as ESA, but there are some differences, like the treatment of intra-unit consumption, growing own crops for leisure etc. The handbook also proposes practical registration and valuation methods for agricultural products such as seasonal

production, cattle and fruit tree cultivation. Generally these methods are also used for agricultural estimates conducted within the framework of the national accounts.

Sources and methods for agriculture (SIC 011- 015)

Functional estimates

Output

Detailed information on imports and exports provided by foreign trade statistics is crucial for many estimates of output of agriculture. To ensure accurate coverage on a calendar-year basis, the corresponding monthly statistical extracts are retroactively adjusted to take account, for example, for post-deadline and annual submissions. These adjustments are applied on a detailed product level.

Information supplied by NEA represents another important source. This body collects a lot of functional information about the output and industrial processing of agricultural products and foodstuffs. It is responsible for applying European Union product regulations and advising the Government on all aspects of the Common Agricultural Policy (CAP).

The Agricultural Census plays an important part in the estimation of agricultural output. This comprehensive survey covers approximately 72,000 agricultural units, which are operating at a significant level in any agricultural activity. The survey covers cultivated areas, numbers of cattle, the workforce and main and secondary activities. It also provides a useful register for sampling surveys such as the harvest estimate conducted by Statistics Netherlands and the survey to obtain data for the Farm Accountancy Data Network (FADN) conducted by the Agricultural Economics Institute.

Since 2002 the Agricultural census is part of the so-called Combined Data Collection (Gecombineerde Data Inwinning; GDI), which is run by NEA. In addition, data collection for the agricultural census is combined with data collection for various administrative arrangements regarding to the CAP, e.g. agricultural subsidies.

The data obtained by NEA are checked on obvious errors at micro level by SN. In a top down approach plausibility checks are initially made on macro- and meso-level including comparability with previous year's estimates. If necessary, adjustments are made on the micro level. The results are discussed with NEA. The agricultural census covers all units and has a response rate of over 96 per cent. The statistical reliability is considered high. Preregistration for the Agricultural Census is required by law as the data are used for the execution of various administrative arrangements (subsidies, fertilisers legislation etc.).

Crop output

The harvest estimate of arable crops is an important source for calculating the output for a number of arable products. The estimate is made on the base of data from a sample survey conducted by Statistics Netherlands among arable farms. The sample comprises approximately 2,500 of the approximately 20,000 units that belong to the target population as stated in the Agricultural Census. The response is grossed up to get estimates for the total target population.

The hay harvest and hay reserves are obtained from the annual grassland statistics compiled by Statistics Netherlands on the basis of a sample of 2,500 units out of a population of 50,000 units.

The harvest estimates for vegetables and fruit provided by Statistics Netherlands are important sources for calculating production for a number of vegetables. This includes estimates for fruit, field-scale vegetables and greenhouse vegetables. The estimate for-field-scale vegetables is based on data from a sample survey among agricultural farms. The sample comprises approximately 1,500 of the approximately 3,000 units that belong to the population as stated in the Agricultural Census. The response is grossed up to estimates for the total target population. The estimate for fruit (apples and pears) is based on a sample of 1,000 units of the approximately 2,000 units that belong to the population.

The estimates for greenhouse vegetables are largely based on the area of land as recorded in the annual agricultural census. For these vegetables no sample survey is carried out as it is possible to determine the quantities harvested of these vegetables using data from SN. These data are based on the export figures of the Quality-Control Bureau for fruit and vegetables (Kwaliteits-Controle-Bureau; KCB). An expert working group, including representatives of Statistics Netherlands and the Ministry of Agriculture, Nature Management and Fisheries discusses the data and approves the harvest estimates after adjusting if judged necessary.

The output of bulbs, flowers and plants, trees and seeds is calculated using data exports with domestic origin supplied by the Royal Flora Holland and data from Foreign Trade Statistics (SN).

Animal output

The following sources are important for the calculation of livestock production:

- Slaughter statistics, which cover the authorised slaughter of home-grown cattle (including domestic pig slaughter). These are comprehensive monthly statistics (using approximately 222 reporters, the 'inspectorates').
- Data supplied by NEA are used to determine poultry slaughter;
- Foreign trade statistics relating to live cattle (values and numbers);
- The Agricultural Census used to determine annual livestock variations (numbers).

The dairy-product statistics compiled by Statistics Netherlands in cooperation with the NEA on the basis of weekly reports contain data on milk deliveries to dairy and dairy-product producers, direct consumer supplies, farm butter and cheese production and cattle rearing both for selling on the market and own intermediate consumption. Coverage is comprehensive. The production of eggs is estimated on the basis of data on the number of laying hens from the agricultural census and the number of average eggs that a laying hen produces in a year in combination with data from Wageningen Economic Research Den Haag (WECR).

Valuation of output

The above mentioned sources provide information on quantities. These quantities are converted to values with price information.

Price information is obtained with reference to:

- Market quotations;
- Structural business statistics (SBS) of the food, beverages and tobacco industry;
- Foreign Trade Statistics;
- NEA data.
- Price statistics from WECR.

For the determination of output, quantities are generally estimated with reference to a number of products indicated in the above-mentioned sources. Quantities are evaluated at basic prices per product with the help of price information and data on taxes and subsidies on products.

Accrual principle and seasonal crop output

Output should be valued and recorded at the time it is generated (accrual principle). It is therefore to be recorded when produced and not when paid for by the purchaser.

In the ESA production is treated as a continuous process in which goods and services are converted into other goods and services. This process may take place over different periods of a year, depending on the products, and may exceed an accounting period. Therefore production, combined with the accrual principle, results in the recording of output in the form of work-in-progress. Thus according to the ESA , the output of agricultural products should be recorded as if produced continuously over the entire production period (and not simply when the crops are harvested or animals slaughtered). Growing crops, standing timber and stocks of fish or animals reared for the purposes of human consumption should be treated as stocks of work-in-progress during the production process, and transformed into stocks of finished products when the process is completed.

Recording output as work-in-progress is both desirable and necessary for economic analysis when the production process occurs over a period exceeding the accounting period. This allows consistency to be maintained between the recording of costs and that of output in order to obtain meaningful data on value added. The NA are based on calendar year, the recording of work-in-progress can be assumed to apply only to products whose production process was not completed within a calendar year and also in cases when prices change rapidly during the accounting period.

However, for farm products whose production cycle is shorter than the accounting period, it is unnecessary to record the output as work-in-progress in annual national accounts. Recording of output at the finished product stage, i.e. at the harvest (for crop production), in fact allows an adequate degree of consistency with the production costs. This holds for most agricultural output whose production cycle lasts less than a year. In theory work-in-progress has to be recorded in short-cycle crops whose production process runs into a second calendar year. However, in these cases growing crops are not recorded as stocks of work-in-progress because the production overlaps are not significant and the sum is assumed to be zero over a number of years.

In practice, only products with a long production cycle need recording in the form of work-in-progress. This concerns particularly livestock and crop products such as plantations whose ageing is an integral part of the production process.

In the Agricultural and Forestry Accounts Handbook a so called reference method is recommended for the valuation of crop output with a short production cycle. For most of these types of crops this method is used by Statistics Netherlands. However for potatoes, onions, apples and pears another method is used. The methods differ in the interpretation of the storage activity and the time of recording the change in the value of the goods resulting from their stay in stocks.

The reference method consists of evaluating total production harvested during calendar year n using the weighted average price for the marketing year (n/n+1). It is founded on the assumption that there are no stocks left over at the end of the marketing year (the end of the first half of the next calendar year). For most of the crop output the marketing year is equal to the calendar year

and the harvest is valued with the average price of the last half of the calendar year (harvest period).The application of this method minimizes the inclusion of holding gains or losses in the measurement of output. It ensures consistency between the calculations of output in value and quantity.

The alternative method for potatoes, onions, apples and pears is chosen because prices are difficult to predict and the storage on agricultural farms reaches economically significant levels. Unfortunately adequate sources regarding to sales and stocks are not available. In theory the argument that prices are difficult to predict only applies for estimating quarterly accounts and the first annual estimates of EAA because information on prices is not timely available. Although this is not valid for the annual accounts, for the sake of consistency between quarterly accounts, preliminary annual estimates and the final estimates, a harmonized approach is preferred.

In this alternative method output is defined as total calendar-year sales valued at basic prices.

In general the value of gross output at current prices of these products is calculated as follows:

- the harvest quantities in year N-1 as indicated in the data sources are broken down in two parts which refer to the sales/use period in calendar-years N-1 and N;
- the harvest quantities in year N as indicated in the data sources are broken down in two parts which refer to the sales/use period in year calendar-years N and N+1;
- the volume of harvest-years N-1 and N which refer to sales/use period N are added (=gross output);
- gross output in quantities is valued at the basic prices on a quarterly basis as indicated in the data sources.

Estimates of the output of plantations and productive animals need to be considered. The growth of multi-annual plantations and animals must be recorded as being produced continuously over the entire period of production, and not simply when the crops are harvested, animals slaughtered). The methods used in the NA, are recommended by the Agricultural and Forestry Accounts Handbook:

- Production of plantations is calculated as the difference between the opening and closing stock derived from balance sheets. Plantations are valued at fair value, usually the market price at the balance sheet date. The calculations are conducted by Wageningen Economic Research Den Haag (WECR) on the basis of Agricultural Census data and FADN.
- Production of productive animals is estimated by valuing the difference in the number of animals at the beginning and end of the accounting year at the average annual price. Simply valuing the difference this way, does however not take into account the fact that the value of livestock as a productive asset is higher than the value as slaughter animals at the end of its life. The ‘exclusion percentage’ is relevant in this context. This ‘exclusion percentage’ refers to the difference in value of livestock as productive and as slaughter animals at the time of their withdrawal from the stock of fixed assets. The production of productive animals is underestimated, if this exclusion percentage is not taken into account.

Other subjects

The registration of export subsidies requires additional attention, as only support for domestic production should be taken into account. The Agricultural Equalisation Fund of the Ministry of Agriculture, Nature Management and Fisheries records all refunds paid in the Netherlands, so it also covers payments to non-resident enterprises by exporting via the Netherlands benefiting from European Union freedom-of-movement legislation. The proportion of refunds can be

determined by comparing extra-community exports from Dutch origin as shown in the Foreign Trade Statistics with the Agricultural Equalisation Fund data.

A product breakdown of subsidies and levies is based on information obtained from NEA. These data are processed to make them consistent with the Agricultural Equalisation Fund totals.

Intermediate consumption

A great variety of sources is used to estimate intermediate consumption:

- Intermediate consumption of characteristic agricultural products is obtained by breaking down output by destination;
- Intermediate consumption of fodder is determined with reference to estimates of the output and sales breakdown by destination of the fodder industry in combination with price information on compound feed compiled by WECR;
- Intermediate consumption of fertiliser is based on the output and sales breakdown by destination of the fertiliser industry. WECR supplies corresponding input prices;
- The value of imported sowing and seed products is taken from the Foreign Trade Statistics. Total value is assumed to be intermediate consumption of agriculture;
- Intermediate consumption of pesticide is based on information provided by domestic producers in the annual business statistics (SBS) of the artificial fertiliser industry, plus imports and minus exports. The calculations also take into account intermediate consumption of products from other industries, for example, earth foam supplied by the sugar industry and imported guano;
- Energy consumption data are obtained from:
    - Annual energy consumption statistics for agriculture and horticulture of SN. The survey is based on a sampling per industry, with subsequent a grossing up to the basis of the Agricultural Census;
    - A WECR survey based on data on energy consumption supplied by agricultural accounting agencies;
- The other cost categories for which information cannot be obtained from the agricultural and horticultural output calculation, and information of agricultural suppliers, are estimated individually by FADN. These costs categories are often not available at the level of detail of the NA commodity groups, but were broken down to product groups using the commodity structure of the balanced pre-benchmark estimates of 2015.

Gross value added

Gross value added is obtained by deducting intermediate consumption from production. Value added components are wages and salaries, other taxes and subsidies on production and gross operating surplus/mixed income:

- The estimation of wages and salaries is based on Labour accounts data. Sources for Labour accounts concerning to agriculture are:
    - Data on hours worked obtained from the Agricultural Census;
    - Monthly micro-datasets on job level (economic activity, working hours, total amount of wages and the number of days for which wages paid) derived from the 'Register of the Employees Insurance Agency' via the 'Social Statistical Database (SSD)' see 4.8.;

    - Data on other subsidies and levies with respect to agricultural production are provided by the Agricultural Equalisation Fund, with breakdowns of these data supplied by NEA and the Ministry of Agriculture, Nature Management and Fisheries;
- The gross operating surplus/mixed income is obtained by deducting the wages and salaries and the balance of other taxes, levies and subsidies from gross value added. In addition, these results are combined with data on the gross operating surplus from the Financial data for agricultural holdings (SN). These data are based on the target population of farms from the Agricultural Census combined with tax data from the Dutch agricultural sector (data from the balance sheet and profit and loss account). This confrontation did not lead to adjusting the value of gross operating surplus/mixed income.
- For the loss regarding inventories of work-in-progress for livestock, a distinction needs to be made between recurrent losses and non-recurrent losses (i.e. exceptional and catastrophic losses). The compensation payments for recurrent losses are recorded as other subsidies on production and for non-recurrent losses as other capital transfers. The recurrent losses themselves are recorded as changes in inventories and the non-recurrent as other changes in the volume of assets.

'Institutional additions'

Ancillary activities directly linked to agricultural activities such as cheese production, renting of agricultural machinery and agri-tourism, are added to the otherwise functional description of this industry. Output of non-farming activities of farmers is estimated using the data from FADN run by WECR.

The FADN-survey provides annual information on agricultural operations (excluding agricultural service units). Observation is based on a stratified sample using the results of the Agricultural Census, supplemented by data from agricultural accounting agencies. This involves some 1,700 reporters, whose results are grossed up to estimates for the whole population of the Agricultural Census population. Information on animals for leisure is missing in the sources statistics for the functional estimates. A separate estimate was made for the producers of pets, cats, horses etc., based on administrative VAT data in conjunction with information from the General Business Register of Statistics Netherlands on SICs 0143 and 0149.

At the national accounts 2015 benchmark revision, data on gross operating surplus/mixed income from the statistics 'Finances of enterprise groups' and 'Self-employed files' were compared with the calculated results as described above (see: Gross value added). The estimation of the agricultural industry statistics are mainly based on the population from the Agricultural census. The populations of the statistics 'Finances of enterprise groups' and 'Self-employed files' (based on corporate tax data and income tax data, respectively) are based on the general business register (GBR) from SN. By comparing these sources it appeared that farms were missing due to the functional approach of the estimates for agriculture, namely companies of which a holding company or management company is registered as owner of the real estate property (farms and agricultural land). The inclusion of these units led to an upward adjustment of value added and also to a better connection with the labour accounts, which also applies to the GBR.

Exhaustiveness

Concealed activities are implicitly incorporated in the estimates, because of the functional estimation method used for agriculture. The functional estimate will also include the own-account production of farming households as harvest estimates covers all yield which is based on total farmland acreage in the Netherlands. Also most significant parts of intermediate consumption are based on commodity flow estimation.

Own-account production by non-farming households (kitchen gardens) requires a separate estimate taking the total allotment area in hectares (3762 hectares in 2010) as a starting point. The latter number is based on the survey 'Land Use' run by Statistics Netherlands. The anticipated average output per hectare is assumed to equal that of small agricultural enterprises (data form WECR, FADN). For the estimate of intermediate consumption the ratio of intermediate consumption and output relating to small enterprises is used. The information stems also from FADN. Value added is compiled as output minus intermediate consumption.

In the Dutch national accounts the production of cannabis is not recorded in agriculture but in manufacturing of tobacco products. The reason is that the full process of cannabis production is all in one hand and comprises more than only agricultural activities. Further processing such as drying, etc. results finally in a tobacco product.

A substantial negative adjustment was made for growing crops and horticulture in SIC 016 regarding to double counting. Growing crops and horticulture are already estimated in the functional estimates for SIC 011- 015. Adjustments were also made for the breeding of animals and the cultivation of crops and horticulture in other industries with regard to double counting as a result of the functional estimates for SIC 011- 015 (Table 3.8.3). These adjustments were made by comparing the population of the Financial data for agricultural statistics (similar to that of the agricultural census) with the population of the GBR.

Table 3.8.3 adjustments for growing crops, horticulture and breeding animals, 2015 (million euros)

NACE Rev.2 Sections	A	B, C, D and E	F	G, H and I	J	K	L	M and N	O, P and Q	R, S, T and U
Output	-553	-117	-102	-891	-1	0	-50	-108	0	-17
Intermediate cons.	-354	-85	-73	-700	0	0	-33	-71	0	-11
Value added	-199	-32	-29	-191	-1	0	-17	-37	0	-6

Sources and methods for agricultural services (SIC 016)

Production, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2. This part of agriculture is based on institutional sources.

Agricultural services are services provided by units which are at least partially involved in agricultural production. These activities, which may also be performed by farmers themselves, include ploughing, mowing, threshing, shepherding and fruit gathering. Nevertheless, other services are also provided; these include artificial insemination, cleaning and insect and weed control by contracted workers. Contract labour may also be employed for other agricultural activities like the operation of irrigation systems, the design, planting and maintenance of gardens, parks, and green areas for sports facilities and the like; tree pruning and hedge trimming, etc.

A negative adjustment has been made for growing crops and horticulture regarding to double counting. Growing crops and horticulture are already estimated in the functional estimates for SIC 011- 014.

Hunting (SIC 017)

There is no commercial hunting in the Netherlands. Hunting is essentially a feature of flora and fauna management, and is mainly confined to the shooting of weak and unhealthy animals. There is a limited amount of sport hunting, involving private consumption of the animals killed. Value added in hunting is negligible . Therefore no estimates for hunting are made in the Dutch national accounts. Research[4] shows that the sales by hunting are around 0,4 million euros. Including production for own final consumption, the output will be less than 1,5 million euros.

Relationships between EAA and national accounts (bridge table)

The EAA agricultural industry differs in some respects from the branch as defined for National Accounts purposes. The differences relate to the definition of both characteristic activities and units. Some characteristics need special attention in the Netherlands.

The EEA records intra-unit consumption of feeding stuffs as output and intermediate consumption as it wants to have a view on gross flows from one agricultural activity to another. In fact the EEA uses the unit of homogeneous production. However in the NA the KAU is the unit of observation in which intra unit flows should not be recorded (Table 3.8.4 column e).

The EAA excludes service activities other than contract work at the production stage for the agricultural production process, whereas they are included in the NA in agricultural service industry (e.g. artificial insemination) (Table 3.8.4 column f, row 3). The EAA includes these service activities (other than contract work) only in the case it is an inseparable secondary activity of an agricultural unit. Other activities like repair, installation, construction, renting real estate are also excluded in the EAA as separable secondary activities. Also services provided by holding companies or management companies that are registered as owner of property of the real estate (farms and agricultural land) are excluded. (Table 3.8.4 column f, row 4).

According to the ESA, the own-account production of agricultural products by households has to be included in the industry account. However, agricultural units below the minimum threshold of the farm survey (production solely for own final consumption in kitchen garden and private livestock rearing) are excluded from the EAA, whereas agricultural products retained by farmers are generally included. Where the household production not covered in the EAA is significant the corresponding values have to be added to the EAA data in order to arrive at the NA values (Table 3.8.4 column d).

Within the EAA agricultural activities are always considered to be separable activities by convention. This is mainly due to the nature of the statistical data sources (functional estimates). Nevertheless, it might happen, that within the industry accounts of the NA some units are not able to separate all their agricultural activities, and record them as an inseparable activity in their proper industry account. This introduces some double counting, which should be avoided. In this context a substantial adjustment has been made for the output of growing crops and horticulture in SIC 016 Agricultural services (see section 3.8.1.1.) and some adjustment has been made in other industries regarding to agricultural output (see Table 3.8.3).

[4] Waarde van de jacht. Tijd en geld besteed door jagers aan maatschappelijke diensten. CLM Onderzoek en advies. April 2014

The EAA excludes life stock from intermediate consumption. In the Netherlands the deliveries of animals in a breeding program between units within agriculture are registered as output and intermediate consumption in the supply and use tables of NA (Table 3.8.4 column g).

Table 3.8.4 Relationships between EAA and national accounts (bridge table), 2015 (million euros)

Item		EAA	NA	Differences NA-EAA				
		Value at basic prices	Value at basic prices	Total	Kitchen gardens	intra unit consumption fodder	Non-EAA activities	Intermediate consumption animals
		(a)	(b)	(c)	(d)	(e)	(f)	(g)
1	CROP OUTPUT	13314	13023	-291	15	-306		
2	ANIMAL OUTPUT	10221	11180	959				959
3	AGRICULTURAL SERVICES OUTPUT	2549	2715	166			166	
4	SECONDARY ACTIVITIES	849	2676	1827			1827	
5	OUTPUT OF THE AGRICULTURAL 'INDUSTRY' (1+2+3+4)	26933	29594	2661	15	-306	1993	959
6	TOTAL INTERMEDIATE CONSUMPTION	16775	18117	1342	6	-306	683	959
7	GROSS VALUE ADDED AT BASIC PRICES (5-6)	10158	11477	1319	9		1310	

3.8.2 Forestry and logging (SIC 02)

Table 3.8.5 Process table of output, intermediate consumption and value added of forestry and logging (SIC 02), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	0	0	255	0	0	255	0	8	0	2	265
Intermediate cons.	0	0	136	0	0	136	0	0	0	-1	135
Value added	0	0	119	0	0	119	0	8	0	3	130

(3) Combined data

For forestry and forestry services, data were obtained from the forestry accounting network and the annual national forestry management report and VAT data and labour statistics.

(10) Balancing

Balancing did not lead to any substantial adjustments in this industry. Small adjustments were made based on the confrontation of supply and use of individual product groups.

Further information

Output of forestry (SIC 02) is very small in the Netherlands. Aggregated data on output and intermediate consumption are derived from the annual national forestry management report and the statistics on private enterprise forestry of the WECR. In addition, a separate estimate was made for the small units active in forestry services based on administrative VAT data and labour statistics. The Netherlands has mainly recreation and conservation forests. Dedicated production forests hardly exist. Therefore no estimates for the growth of multi-annual standing timber are made. Small scale sales of timber occur as a side activity of forestry services like maintenance and conservation management. These sales are recorded in the national accounts.

3.8.3 Fishing and aquaculture (SIC 03)

Table 3.8.6 Process table of output, intermediate consumption and value added of fishing and aquaculture (SIC 03), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	0	0	500	0	0	500	0	0	0	0	500
Intermediate cons.	0	0	212	0	0	212	0	-1	-2	0	209
Value added	0	0	288	0	0	288	0	1	2	0	291

(3) Combined data

This column refers to data from the Wageningen Economic Research Den Haag (WECR) obtained from shipping registry accounts and estimations of Aquaculture farms.

(8) Conceptual

As described in section 3.5, adjustments have been made for fisim, software, R&D, insurance services and outsourced transportation activities.

(9) Exhaustiveness

As described in section 3.7, adjustments were made for cost fraud.

(10) Balancing

Balancing did not lead to any substantial adjustments in this industry. Small adjustments were made based on the confrontation of supply and use of individual product groups.

Further information

Estimates of output, intermediate consumption and value added are based on WECR data, obtained from shipping registry accounts. Sample surveys cover approximately 30 per cent of potential reporters. Mussel farming is also included, apart from cutter fisheries and large-scale high-seas fishing. The WECR data cover 'grey' fishing, i.e. catches not notified under the European Union quota system, but subject to Value Added Tax. Aquaculture farms are also estimated by the WECR. Eel and catfish are the primary species bred. In addition, a separate estimate was made for 'tropical' fish farming for leisure (e.g. koi carp) which information derived from the VAT registry in conjunction with SBR SIC 0149.

Table 1.11 Table 3.8.7 Output of Fishing by branch, 2015 (million euros)

	For consumption	
1	Cutter fisheries	249
2	Large-scale high sea fishing	103
3	Other fishing (e.g. mussels)	74
4	Aquaculture fish farming	47
	For leisure	
5	Tropical fish farming	27
1-5	**TOTAL**	**500**

3.9 Mining and quarrying (SIC B)

Table 3.9.1 Process table of output, intermediate consumption and value added of SIC B Mining and quarrying, 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	17.732	0	0	0	0	17.732	1.043	8	0	91	18.874
Intermediate cons.	5.872	0	0	0	0	5.872	549	71	-5	-182	6.305
Value added	11.860	0	0	0	0	11.860	494	-63	5	273	12.569

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

The largest adjustments were made in SIC 06 Extraction of crude petroleum and gas and SIC 09 Mining support service activities, see for more information section 3.9.1 and section 3.9.3.

(8) Conceptual

As described in section 3.5, adjustments have been made for fisim, software, R&D, insurance services and outsourced transportation activities.

(9) Exhaustiveness

Adjustments have been made for cost fraud and income in kind (cf. section 3.7).

(10) Balancing

Adjustments were made based on the confrontation of supply and use of individual product groups.

3.9.1 Extraction of crude petroleum and natural gas (SIC 06)

Table 3.9.2 Process table of output, intermediate consumption and value added of the combined SIC 06 Extraction of crude petroleum and gas, 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	11.986	0	0	0	0	11.986	531	42	0	111	12.670
Intermediate cons.	2.136	0	0	0	0	2.136	541	74	-2	-63	2.686
Value added	9.850	0	0	0	0	9.850	-10	-32	2	174	9.984

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

In SBS, purchases of net-services (network services) were mistakenly recorded as purchases of goods for resale (trade). Therefore, output and intermediate consumption are upwards adjusted to include the value of these net-services.

(8) Conceptual

As described in section 3.5, adjustments have been made for fisim, software, R&D, insurance services, outsourced transportation activities and holding gains and losses on goods held in inventory

(9) Exhaustiveness

As described in section 3.7, adjustments have been made for cost fraud and income in kind

(10) Balancing

Output of small oil and gas fields are estimated using a sample survey, where the sample results are grossed up to population totals using employment data. As output per employed person is very volatile for the small fields, estimates of output and intermediate consumption are very dependent on the sample. For this reason SBS data on output and intermediate consumption are adjusted in the balancing process.

3.9.2 Other mining and quarrying (SIC 08)

Table 3.9.3 Process table of output, intermediate consumption and value added of SIC 08 Other mining and quarrying, 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	1.036	0	0	0	0	1.036	22	-47	0	-105	906
Intermediate cons.	764	0	0	0	0	764	11	-43	-1	-148	583
Value added	272	0	0	0	0	272	11	-4	1	43	323

(1) Surveys & censuses

Data on output, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

Small adjustments to output and intermediate consumption were made to correct for errors in the initial conversion from SBS commodity groups to SUT commodity groups.

(8) Conceptual

As described in section 3.5, adjustments have been made for fisim, software, R&D, insurance services and outsourced transportation activities. The latter is the largest adjustment.

(9) Exhaustiveness

Adjustments have been made for cost fraud and income in kind (cf. section 3.7).

(10) Balancing

Adjustments were made based on the confrontation of supply and use of individual product groups. Production and intermediate consumption were adjusted to match the international trade in goods statistics. Furthermore, certain companies erroneously registered purchases of goods for resale as purchases of raw materials This was adjusted in the balancing process by reducing output and intermediate consumption with the value of purchases of raw materials.

3.9.3 Mining support service activities (SIC 09)

Table 3.9.4 Process table of output, intermediate consumption and value added of SIC 09 Mining support service activities, 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	4.710	0	0	0	0	4.710	490	13	0	85	5.298
Intermediate cons.	2.972	0	0	0	0	2.972	-3	40	-2	29	3.036
Value added	1.738	0	0	0	0	1.738	493	-27	2	56	2.262

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

Confrontation of micro data from SBS with data from the Statistics on Finances of Enterprise Groups (SFO) led to the conclusion that the value of production and operating surplus in SBS was too low for a specific imputed enterprise. Therefore, the value of production from SBS was adjusted upwards.

(8) Conceptual

The largest adjustments are made on intermediate consumption for FISIM (59 million euro) and R&D (-32 million euro).

(9) Exhaustiveness

Adjustments have been made for cost fraud and income in kind (cf. section 3.7).

(10) Balancing

Small adjustments were made based on the confrontation of supply and use of individual product groups.

3.10 Manufacturing (NACE Rev. 2 Section C)

Table 3.10.1 Process table of output, intermediate consumption and value added of manufacturing industry, 2010 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	298.339	0	0	82	0	298.421	973	104	3.317	429	303.244
Intermediate cons.	231.917	0	0	0	0	231.917	-91	-2.888	450	-677	228.711
Value added	66.422	0	0	82	0	66.504	1.064	2.992	2.867	1.106	74.533

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

This item generally includes adjustments on the source data due to rounding. Large adjustments were made in SIC 20, SIC 21 and SIC 26. See sections 3.10.9, 3.10.10 and 3.10.15 for more details.

(8) Conceptual

As described in section 3.5, adjustments have been made for fisim, software, R&D, insurance services, outsourced transportation activities and holding gains and losses on goods held in inventory.

(9) Exhaustiveness

In tobacco industry and pharmaceutical industry estimates for illegal production of cannabis and xtc are included. Furthermore, as described in section 3.7, adjustments were made for cost fraud and income in kind.

(10) Balancing

Adjustments are made based on the confrontation of supply and use of individual products in the supply and use tables. In general, supply was somewhat smaller than use and therefore in a number of branches output and value added were adjusted upwards in the balancing process (cf. chapter 6).

The manufacturing industry (SIC 10-33) is subdivided into the following industry classes:

- Manufacture of food products, beverages and tobacco products (SIC 10-12);
- Manufacture of textiles, wearing apparel and leather products (SIC 13-15);
- Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials (SIC 16);
- Manufacture of paper and paper products (SIC 17);
- Printing and reproduction of recorded media (SIC 18);
- Manufacture of coke and refined petroleum products (SIC 19);
- Manufacture of chemicals and chemical products (SIC 20);
- Manufacture of basic pharmaceutical products and pharmaceutical preparations (SIC 21);
- Manufacture of rubber and plastic products (SIC 22);
- Manufacture of other non-metallic mineral products (SIC 23);
- Manufacture of basic metals (SIC 24);
- Manufacture of fabricated metal products, except machinery and equipment (SIC 25);
- Manufacture of computers, electronic and optical products (SIC 26);
- Manufacture of electrical equipment (SIC 27);
- Manufacture of machinery and equipment n.e.c. (SIC 28);
- Manufacture of motor vehicles, trailers and semi-trailers (SIC 29);
- Manufacture of other transport equipment (SIC 30);
- Manufacture of furniture (SIC 31);
- Manufacture of other products n.e.c. (SIC 32);
- Repair and installation of machinery and equipment (SIC 33).

3.10.1 Manufacture of food products (SIC 10)

Table 3.10.2 Process table of output, intermediate consumption and value added of manufacture of food products (SIC 10), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	59.577	0	0	0	0	59.577	-1.311	-217	-74	84	58.059
Intermediate cons.	49.458	0	0	0	0	49.458	-1.485	-99	-116	-218	47.540
Value added	10.119	0	0	0	0	10.119	174	-118	42	302	10.519

(1) Surveys & censuses

Production, intermediate consumption and value added for Manufacture of food products (SIC 010) are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

In estimating part of the food industry (slaughterhouses and dairy industry) specific upward adjustments in terms of value added to SBS-data have been made. This is mainly because additional high quality information is available from dedicated statistics. As a consequence, estimates for this industry are made on a more detailed level than in other manufacturing industries, see also further information for more details.

In addition, an adjustment was made for a large company in SBS. A part of output and intermediate consumption is related to trade activities rather than industrial activities. A substantial negative adjustment has been made to comply with the concept of trade margins.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D, insurance services, outsourced transportation services and holding gains and losses on goods held in inventory

(9) Exhaustiveness

As described in section 3.7., adjustments were made for cost fraud and income in kind. Furthermore, a negative adjustment was made for growing crops and horticulture to avoid double counting. Growing crops and horticulture are already estimated in the functional estimates for SIC 011- 015.

(10) Balancing

Further adjustments are made based on the confrontation of supply and use of individual product. A significant adjustment was made on intermediate consumption as the initial conceptual adjustments on R&D and FISIM proved to be too high.

Further information

In estimating part of the food industry (*slaughterhouses* and *dairy industry)* specific adjustments to SBS-data have been made. This is mainly because a number of dedicated high quality data sources are available in this context. As a consequence, estimates for this industry are made on a more detailed level than in other manufacturing industries.

Slaughterhouses: the SBS and Prodcom data on private and local-authority slaughterhouses provide an important information source for slaughterhouse processing estimates. The slaughter statistics of Statistics Netherlands (information from NEA) are used to make a supplementary estimate of slaughtering. With the aid of the slaughter statistics, the weight of live animal purchases is distributed over different sales categories. These quantities are converted to values with price information provided by SN and WECR. In the slaughter statistics all slaughtered cattle is registered. At the product level, the quality of these data is higher than the information from the SBS and Prodcom in connection with calendar and financial year problems and unreliability due to sampling. Hence, adjustments have been made to SBS data.

Dairy industry: the (SBS) and Prodcom data on dairy products provide an important information source for dairy processing estimates. The Dairy product statistics of Statistics Netherlands (information from NEA) contain quantitative information on the production of milk and milk products, butter, cheese, cream, cheese, milk powder, condensed milk and whey powders. In addition, these statistics also contain quantitative information on processed raw milk supplied by farmers. These quantities are converted to values with price information provided by SN and WECR. At the product level, the quality of these data is higher than the information from the SBS and Prodcom. Hence, adjustments have been made to SBS data.

Many enterprises in agriculture and food processing base their operations on a financial year which is linked to the natural cycle of agricultural production. As a consequence information in business statistics (SBS) of food processing like sugar and starch potatoes industry does not

always correspond to calendar years of the NA and therefore have to be adjusted. Additional (functional) data are used for this purpose.

Negative adjustment has been made for agricultural output to avoid double counting due to the functional estimation procedure in SIC 011-014.

3.10.2 Manufacture of beverages (SIC 11)

Table 3.10.3 Process table of output, intermediate consumption and value added of manufacture of beverages (SIC 11), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	4.333	0	0	0	0	4.333	38	-25	-1	-10	4.335
Intermediate cons.	2.899	0	0	0	0	2.899	1	-4	-8	-9	2.879
Value added	1.434	0	0	0	0	1.434	37	-21	7	-1	1.456

(1) Surveys & censuses

Production, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

Some minor adjustments were made on the SBS results.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D, insurance services and outsourced transportation services.

(9) Exhaustiveness

Adjustments were been made for cost fraud and income in kind (cf. section 3.7).

(10) Balancing

Balancing did not lead to any substantial adjustments in this industry. Small adjustments were made based on the confrontation of supply and use of individual products.

3.10.3 Manufacture of tobacco products (SIC 12)

Table 3.10.4 Process table of output, intermediate consumption and value added of manufacture of tobacco (SIC 12), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	724	0	0	0	0	724	0	4	3.236	1	3.965
Intermediate cons.	464	0	0	0	0	464	0	22	981	-27	1.440
Value added	260	0	0	0	0	260	0	-18	2.255	28	2.525

(1) Surveys & censuses

Production, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(8) Conceptual

As described in section 3.5, adjustments have been made for fisim, software, R&D, insurance services and outsourced transportation services.

(9) Exhaustiveness

Adjustments are made specifically for hidden illegal activities (cannabis). The supplementary estimate of illegal activities leads to an upward adjustment of output in this branch by 3,236 million euros. The value added increased by 2,253 million euros. See section 7.2.3 for more details.

Furthermore, as described in section 3.7, adjustments were made for cost fraud and income in kind.

(10) Balancing

Balancing did not lead to any substantial adjustments in this industry. Small adjustments were made based on the confrontation of supply and use of individual product groups.

3.10.4 Textiles, wearing apparel and leather industry (SIC 13, 14 and 15)

Table 3.10.5 Process table of output, intermediate consumption and value added of textile, wearing apparel and leather products (SIC 13-15), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	3.360	0	0	0	0	3.360	0	2	2	22	3.386
Intermediate cons.	2.292	0	0	0	0	2.292	4	-2	-10	3	2.287
Value added	1.068	0	0	0	0	1.068	-4	4	12	19	1.099

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the survey-based structural business statistics (SBS).

(7) Data validation

An adjustment was made to the SBS-data for very small enterprises (cf. section 3.2.2).

(8) Conceptual

As described in section 3.5, adjustments have been made for fisim, software, R&D, insurance services and outsourced transportation services.

(9) Exhaustiveness

Adjustments have been made for concealed activities and income in kind (cf. section 3.7).

(10) Balancing

Balancing did not lead to any substantial adjustments in this industry. Small adjustments were made based on the confrontation of supply and use of individual products.

3.10.5 Manufacture of wood products (SIC 16)

Table 3.10.6 Process table of output, intermediate consumption and value added of manufacture of wood products (SIC 16), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	2.598	0	0	0	0	2.598	0	-4	-1	2	2.595
Intermediate cons.	1.805	0	0	0	0	1.805	6	-1	-7	0	1.803
Value added	793	0	0	0	0	793	-6	-3	6	2	792

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the survey-based structural business statistics (SBS).

(7) Data validation

An adjustment was made to the SBS-data for very small enterprises (cf. section 3.2.2).

(8) Conceptual

As described in section 3.5, adjustments have been made for fisim, software, R&D, insurance services and outsourced transportation services.

(9) Exhaustiveness

Adjustments have been made for agriculture activities, cost fraud and income in kind (cf. section 3.7).

(10) Balancing

Balancing did not lead to any substantial adjustments in this industry. Small adjustments were made based on the confrontation of supply and use of individual products.

3.10.6 Paper and paper products industry (SIC 17)

Table 3.10.7 Process table of output, intermediate consumption and value added of paper and paper products (SIC 17), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	6.562	0	0	0	0	6.562	0	-47	0	31	6.546
Intermediate cons.	5.044	0	0	0	0	5.044	-1	-25	-12	-67	4.939
Value added	1.518	0	0	0	0	1.518	1	-22	12	98	1.607

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the survey-based structural business statistics (SBS).

(7) Data validation

In this particular case, the adjustments are due to rounding in the underlying subclasses

(8) Conceptual

As described in section 3.5, adjustments have been made for fisim, software, R&D, insurance services and outsourced transportation services.

(9) Exhaustiveness

Adjustments have been made for cost fraud and income in kind (cf. section 3.7).

(10) Balancing

Small adjustments were made based on the confrontation of supply and use of individual products. Especially the supply of typical commodities in SIC 17, SIC 18 and SIC 58 was smaller than demand, which led to an upward adjustment of production and a downward adjustment on intermediate consumption in SIC 17.

3.10.7 Printing and reproduction of recorded media (SIC 18)

Table 3.10.8 Process table of output, intermediate consumption and value added of printing and reproduction of recorded media (SIC 18), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	3578	0	0	0	0	3578	0	24	0	149	3751
Intermediate cons.	2262	0	0	0	0	2262	10	3	-13	39	2301
Value added	1316	0	0	0	0	1316	-10	21	13	110	1450

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the survey-based structural business statistics (SBS).

(7) Data validation

An adjustment was made to the SBS-data for very small enterprises (cf. section 3.2.2).

(8) Conceptual

As described in section 3.5, adjustments have been made for fisim, software, R&D, insurance services and outsourced transportation services.

(9) Exhaustiveness

As described in section 3.7, adjustments have been made for cost fraud and income in kind.

(10) Balancing

Balancing has led to adjustments on the supply and use of different commodities. These adjustments were made based on the confrontation of supply and use of individual products. Especially the supply of typical commodities in SIC 17, SIC 18 and SIC 58 was smaller than demand, which led to an upward adjustment of production in this SIC.

3.10.8 Manufacture of coke and refined petroleum products (SIC 19)

Table 3.10.9 Process table of output, intermediate consumption and value added of coke and refined petroleum products (SIC 19), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	25.264	0	0	0	0	25.264	7	187	0	-173	25.285
Intermediate cons.	23.845	0	0	0	0	23.845	-5	79	-4	-134	23.781
Value added	1.419	0	0	0	0	1.419	12	108	4	-39	1.504

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the survey-based structural business statistics (SBS).

(7) Data validation

Small adjustments to output and intermediate consumption were made to correct for errors in the initial conversion from SBS commodity groups to SUT commodity groups.

(8) Conceptual

As described in section 3.5, adjustments have been made for revaluation of inventory, fisim, software, R&D, insurance services, outsourced transportation services and holding gains and losses on goods held in inventory

(9) Exhaustiveness

Adjustments have been made for cost fraud and income in kind (cf. section 3.7).

(10) Balancing

Balancing has led to relatively limited adjustments on the supply and use of different commodities.

3.10.9 Chemicals industry (SIC 20)

Table 3.10.10 Process table of output, intermediate consumption and value added of chemicals (SIC 20), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	43.572	0	0	0	0	43.572	-1.797	-86	0	93	41.782
Intermediate cons.	35.173	0	0	0	0	35.173	-2.252	-181	-35	-420	32.285
Value added	8.399	0	0	0	0	8.399	455	95	35	513	9.497

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the survey-based structural business statistics (SBS).

(7) Data validation

Based on supplementary information for a large company, part of the intermediate use was reclassified to gross fixed capital formation. Consolidation as a consequence of changes in the structure of another enterprise group led to a decrease of both output and intermediate consumption by roughly 1.8 billion euros.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D, insurance services, outsourced transportation services and revaluation. In this industry the adjustments for R&D and revaluation of inventories were relatively high, but were partly offset by fisim.

(9) Exhaustiveness

Adjustments have been made for cost fraud and income in kind (cf. section 3.7).

(10) Balancing

Balancing led to adjustments in this industry. Adjustments were made in intermediate consumption of the gas industry. For this industry the consumer price index is initially applied in estimations. This was later adjusted downward as the price for large gas users is lower which led to a substantial adjustment in the chemical industry as this is an activity that uses gas in considerable quantities.

3.10.10 Pharmaceuticals industry (SIC 21)

Table 3.10.11 Process table of output, intermediate consumption and value added of pharmaceuticals (SIC 21), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	5.155	0	0	0	0	5.155	376	5	175	73	5.784
Intermediate cons.	3.147	0	0	0	0	3.147	391	-129	-8	-40	3.361
Value added	2.008	0	0	0	0	2.008	-15	134	183	113	2.423

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the survey-based structural business statistics (SBS).

(7) Data validation

As a consequence of supplementary information on global production arrangements of a large enterprise group, production as well as intermediate consumption was adjusted upwards.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, insurance services and outsourced transportation services. In this industry, the adjustment for Research and Development was relatively high (183 million euro). The adjustment for R&D was erroneously included under balancing as this was done late in the process.

(9) Exhaustiveness

Almost all of the adjustments mentioned under this category were attributable to the illegal production of drugs, the output of which amounted to 175 million euros. In addition some small adjustments were made for income in kind, as well as white spots, as described in section 3.7.

(10) Balancing

Balancing led to adjustments of the supply and use of Research and Development. This amount was erroneously included under balancing and should have been included under conceptual.

3.10.11 Rubber and plastic products industry (SIC 22)

Table 3.10.12 Process table of output, intermediate consumption and value added of rubber and plastic products (SIC 22), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	8.310	0	0	0	0	8.310	0	-21	-2	35	8.322
Intermediate cons.	5.634	0	0	0	0	5.634	12	-18	-23	-29	5.576
Value added	2.676	0	0	0	0	2.676	-12	-3	21	64	2.746

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the survey-based structural business statistics (SBS).

(7) Data validation

An adjustment was made to the SBS-data for very small enterprises (cf. section 3.2.2).

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D, insurance services and outsourced transportation services.

(9) Exhaustiveness

Adjustments were made for cost fraud and income in kind (cf. section 3.7).

(10) Balancing

Further small adjustments are made based on the confrontation of supply and use of products.

3.10.12 Manufacture of other non-metallic mineral products (SIC 23)

Table 3.10.13 Process table of output, intermediate consumption and value added of manufacture of other non-metallic mineral products (SIC 23), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	5.123	0	0	0	0	5.123	-1	-121	0	12	5.013
Intermediate cons.	3.506	0	0	0	0	3.506	21	-126	-15	-4	3.382
Value added	1.617	0	0	0	0	1.617	-22	5	15	16	1.631

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the survey-based structural business statistics (SBS).

(7) Data validation

An adjustment was made to the SBS-data for very small enterprises (cf. section 3.2.2).

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D, insurance services and outsourced transportation services. In this industry, the adjustments in output and intermediate use made for transportation services were relatively high (66 million euro).

(9) Exhaustiveness

Adjustments were made for cost fraud and income in kind (cf. section 3.7).

(10) Balancing

Balancing did not lead to any substantial adjustments in this industry. Small adjustments were made based on the confrontation of supply and use of individual products.

3.10.13 Manufacture of basic metals. (SIC 24)

Table 3.10.14 Process table of output, intermediate consumption and value added of the manufacture of basic metals (SIC 24), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	7.031	0	0	0	0	7.031	1	24	0	-5	7.051
Intermediate cons.	5.243	0	0	0	0	5.243	2	-39	-8	-14	5.184
Value added	1.788	0	0	0	0	1.788	-1	63	8	9	1.867

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the survey-based structural business statistics (SBS).

(7) Data validation

In this particular case, the adjustments are due to rounding in the underlying subgroups.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D, insurance services, outsourced transportation services and revaluation of inventories.

(9) Exhaustiveness

Adjustments were made for cost fraud and income in kind (cf. section 3.7).

(10) Balancing

Balancing did not lead to any substantial adjustments in this industry. Small adjustments were made based on the confrontation of supply and use of individual products.

3.10.14 Manufacture of metal products. (SIC 25)

Table 3.10.15 Process table of output, intermediate consumption and value added of manufacture of metal products (SIC 25), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	19.055	0	0	0	0	19.055	17	6	-4	-14	19.060
Intermediate cons.	12.528	0	0	0	0	12.528	73	-52	-63	-63	12.423
Value added	6.527	0	0	0	0	6.527	-56	58	59	49	6.637

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the survey-based structural business statistics (SBS).

(7) Data validation

An adjustment was made to the SBS-data for very small enterprises. In SBS the very small enterprises are not included in the survey, but estimated on the basis of turnover value from VAT-data and structural data on turnover and costs of the enterprises in the smallest size classes that are surveyed in SBS (cf. section 3.2.2). After confrontation with the data from the Labour Accounts, the estimated value of compensation of employees was found to be too low for the non-surveyed size classes in SBS. Furthermore, some small adjustments were made to account for minor inconsistencies found after converting the SBS-data to national accounts definitions.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D, insurance services and outsourced transportation services.

(9) Exhaustiveness

Adjustments were made for cost fraud and income in kind (cf. section 3.7).

(10) Balancing

Balancing did not lead to any substantial adjustments in this industry. Small adjustments were made based on the confrontation of supply and use of individual products.

3.10.15 Manufacture of electronic products (SIC 26)

Table 3.10.16 Process table of output, intermediate consumption and value added of the manufacture of electronic products (SIC 26), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	36.760	0	0	0	0	36.760	3.519	57	0	-4	40.332
Intermediate cons.	33.045	0	0	0	0	33.045	2.961	-661	-22	266	35.589
Value added	3.715	0	0	0	0	3.715	558	718	22	-270	4.743

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the survey-based structural business statistics (SBS).

(7) Data validation

Source data of a large company were based on the fiscal year and were adapted to a calendar year. Coincidentally this companies production and use differed considerably in the months not included in the fiscal year. As a consequence, data were adjusted upward. Production increased more than intermediate use, causing an upward adjustment in value added.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D, insurance services, outsourced transportation services and holding gains and losses on goods held in inventory. In this industry, the adjustments for software and Research and Development were relatively high, roughly 500 million euro.

(9) Exhaustiveness

Adjustments were made for cost fraud and income in kind (cf. section 3.7).

(10) Balancing

Adjustments were made to balance supply and use and to balance information from different data sources, most importantly the comparison with data on trade services reported in the International trade in Services and those reported in the SBS.

3.10.16 Manufacture of electrical equipment (SIC 27)

Table 3.10.17 Process table of output, intermediate consumption and value added of the manufacture of electric equipment (SIC 27), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	6.528	0	0	0	0	6.528	0	56	-1	4	6.587
Intermediate cons.	4.512	0	0	0	0	4.512	5	-552	-15	26	3.976
Value added	2.016	0	0	0	0	2.016	-5	608	14	-22	2.611

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the survey-based structural business statistics (SBS).

(7) Data validation

An adjustment was made to the SBS-data for very small enterprises (cf. section 3.2.2).

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D, insurance services and outsourced transportation services. In this industry, the adjustment for Research and Development was relatively high (522 million euros in value added).

(9) Exhaustiveness

Adjustments were made for cost fraud and income in kind (cf section 3.7).

(10) Balancing

Balancing did not lead to any substantial adjustments in this industry. Small adjustments were made based on the confrontation of supply and use of individual products.

3.10.17 Manufacture of machinery n.e.c. (SIC 28)

Table 3.10.18 Process table of output, intermediate consumption and value added of the manufacture of machinery n.e.c. (SIC 28), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	25.192	0	0	0	0	25.192	-1	184	-1	5	25.379
Intermediate cons.	16.864	0	0	0	0	16.864	26	-1.030	-60	-56	15.744
Value added	8.328	0	0	0	0	8.328	-27	1.214	59	61	9.635

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the survey-based structural business statistics (SBS).

(7) Data validation

An adjustment was made to the SBS-data for very small enterprises (cf. section 3.2.2).

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D, insurance services, outsourced transportation services and holding gains and losses on goods held in inventory. In this industry, the adjustment for Research and Development was relatively high (approximately 1,2 billion euro).

(9) Exhaustiveness

Adjustments were made for cost fraud and income in kind (cf. section 3.7).

(10) Balancing

Balancing did not lead to any substantial adjustments in this industry. Small adjustments were made based on the confrontation of supply and use of individual products.

3.10.18 Manufacture of cars and trailers (SIC 29)

Table 3.10.19 Process table of output, intermediate consumption and value added of the manufacture of cars and trailers (SIC 29), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	10.081	0	0	0	0	10.081	0	-1	0	-2	10.078
Intermediate cons.	8.021	0	0	0	0	8.021	20	-29	-10	-6	7.996
Value added	2.060	0	0	0	0	2.060	-20	28	10	4	2.082

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the survey-based structural business statistics (SBS).

(7) Data validation

An adjustment was made to the SBS-data for very small enterprises (cf. section 3.2.2).

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, Research and Development, insurance services and outsourced transportation services.

(9) Exhaustiveness

Adjustments were made for cost fraud and income in kind (cf. section 3.7).

(10) Balancing

Balancing did not lead to any substantial adjustments in this industry. Small adjustments were made based on the confrontation of supply and use of individual products.

3.10.19 Manufacture of other transport (SIC 30)

Table 3.10.20 Process table of output, intermediate consumption and value added of other transport (SIC 30), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	7.498	0	0	0	0	7.498	-1	26	0	102	7.625
Intermediate cons.	6.104	0	0	0	0	6.104	3	0	-11	95	6.191
Value added	1.394	0	0	0	0	1.394	-4	26	11	7	1.434

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the survey-based structural business statistics (SBS).

(7) Data validation

An adjustment was made to the SBS-data for very small enterprises (cf. section 3.2.2).

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D, insurance services and outsourced transportation services.

(9) Exhaustiveness

As described in section 3.7, adjustments were made for cost fraud and income in kind.

(10) Balancing

Balancing led to relatively limited adjustments on the supply and use of different commodities.

3.10.20 Manufacture of furniture (SIC 31)

Table 3.10.21 Process table of output, intermediate consumption and value added of the manufacturing of furniture (SIC 31), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	3.311	0	0	0	0	3.311	-1	9	0	-9	3.310
Intermediate cons.	2.093	0	0	0	0	2.093	8	-14	-14	9	2.082
Value added	1.218	0	0	0	0	1.218	-9	23	14	-18	1.228

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the survey-based structural business statistics (SBS).

(7) Data validation

An adjustment was made to the SBS-data for very small enterprises (cf. section 3.2.2).

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D, insurance services and outsourced transportation services.

(9) Exhaustiveness

Adjustments were made for cost fraud and income in kind (cf. section 3.7).

(10) Balancing

Balancing did not lead to any substantial adjustments in this industry. Small adjustments were made based on the confrontation of supply and use of individual products.

3.10.21 Manufacture of other products (SIC 32)

Table 3.10.22 Process table of output, intermediate consumption and value added of the manufacturing of other products n.e.c. (SIC 32), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	5.679	0	0	82	0	5.761	127	21	-7	13	5.915
Intermediate cons.	2.018	0	0	0	0	2.018	88	-28	-40	7	2.045
Value added	3.661	0	0	82	0	3.743	39	49	33	6	3.870

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the survey-based structural business statistics (SBS).

(4) Other Extrapolation & models

The output of *s*heltered employment, which is one of the activities covered in this section, is based on "sum of the costs" as this specific part of this branch is part of the government sector. Production has been adjusted to adhere to the non-profit principle that applies for the government sector, which means that production is estimated as sum of cost.

(7) Data validation

Information on sheltered employment from labour accounts led to an adjustment of the value added of almost 40 million euros.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D, insurance services and outsourced transportation services.

(9) Exhaustiveness

Adjustments were made for cost fraud and income in kind (cf. section 3.7).

(10) Balancing

Balancing did not lead to any substantial adjustments in this industry. Some adjustments were made based on the confrontation of supply and use of individual products.

Further information

SIC 32 covers sheltered employment and the manufacture of jewellery, musical instruments, sports goods, games and toys, medical instruments and other goods not elsewhere classified. For the estimation of this industry SBS-data on a more detailed level are available.

3.10.22 Repair and installation of machinery (SIC 33)

Table 3.10.23 Process table of output, intermediate consumption and value added of the repair and installation of machinery (SIC 33), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	9.048	0	0	0	0	9.048	0	21	-5	20	9.084
Intermediate cons.	5.960	0	0	0	0	5.960	21	-2	-37	-35	5.907
Value added	3.088	0	0	0	0	3.088	-21	23	32	55	3.177

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the survey-based structural business statistics (SBS).

(7) Data validation

An adjustment was made to the SBS-data for very small enterprises (cf. section 3.2.2).

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D, insurance services and outsourced transportation services.

(9) Exhaustiveness

Adjustments were made for cost fraud and income in kind (cf. section 3.7).

(10) Balancing

Small adjustments were made based on the confrontation of supply and use of individual products.

3.11 Electricity, gas, steam and air conditioning supply (NACE Rev. 2 Section D)

Table 3.11.1 Process table of output, intermediate consumption and value added of SIC D Electricity, gas, steam and air conditioning supply, 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	17.872	0	0	0	0	17.872	137	128	160	-438	17.859
Intermediate cons.	10.710	0	0	0	0	10.710	-243	-185	-40	-200	10.042
Value added	7.162	0	0	0	0	7.162	380	313	200	-238	7.817

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

Some companies inadvertently reported the return on financial derivatives in the production account. These returns on so-called weather derivatives were removed from production. Furthermore, turnover of trade in energy products was sometimes mistakenly recorded as production of energy products in SBS. This turnover and the corresponding intermediate consumption, are reclassified and treated as trade and purchases for resale. This lead to a decrease in production and intermediate consumption.

(8) Conceptual

Output was adjusted upwards mainly to account for the own production of software (108 million euro). Adjustments were also made to output to account for the production of R&D. Intermediate consumption was adjusted downwards to remove expenditures on software (-319 million euro), to impute expenditures on fisim (+201 million euro) and to remove R&D expenditures (-45 million euro).

(9) Exhaustiveness

Output and value added were both adjusted upwards by 176 million euro for the own production of electricity by households using solar panels. See chapter 7 for more detail. Intermediate consumption was reduced by 40 million euros, mainly to correct for income in kind (28 million euro).

(10) Balancing

Production was adjusted downwards by 250 million euro to bring gross value added in the SUT more in line with SBS. Furthermore, adjustments were made to both production and intermediate consumption based on the confrontation of supply and use of individual product groups.

3.12 Water supply; sewerage, waste management and remediation activities (NACE Rev. 2 Section E)

Table 3.12.1 Process table of output, intermediate consumption and value added of SIC E Water supply; sewerage, waste management and remediation activities, 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	9.622	0	287	0	0	9.909	-1	-19	-5	283	10.167
Intermediate cons.	6.083	0	210	0	0	6.293	9	-152	-24	-131	5.995
Value added	3.539	0	77	0	0	3.616	-10	133	19	414	4.172

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(3) Combined data

Joint-municipality arrangements and non-profit institutions serving local government (NPIs) also produce environmental services. This activity is not covered by business statistics (SBS).

(8) Conceptual

Adjustments were made mainly for fisim (intermediate consumption +97 million euro), outsourced transportation costs (production and intermediate consumption -72 million euro) and software (production +39 million euro and intermediate consumption -64 million euro).

(9) Exhaustiveness

Adjustments were made for cost fraud and income in kind (cf. section 3.7).

(10) Balancing

An adjustment was made for the production of scrap and waste products. For these products, large differences existed between supply and demand. Analysis of the data of wholesale trade in waste and scrap showed that the turnover was in line with the demand for scrap and waste. Purchases for resale were in line with turnover but by far outweighed supply. This led to the conclusion the inconsistency was caused by an insufficient supply rather than by an overestimated use. A large part of the discrepancy difference is attributed to production of the wholesale trade in waste and scrap. This led to an increase in production of 206 million euros.

Other adjustments were made to production and intermediate consumption based on the confrontation of supply and use of individual product groups.

3.13 Construction (NACE Rev. 2 Section F)

Table 3.13.1 Process table of output, intermediate consumption and value added of SIC section F, Construction, 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	83.086	0	0	0	0	83.086	-1	160	1.591	4	84.840
Intermediate cons.	57.780	0	0	0	0	57.780	186	121	360	-1	58.446
Value added	25.306	0	0	0	0	25.306	-187	39	1.231	5	26.394

(1) Surveys & censuses

Production, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

The largest adjustments were made in SIC 41 and SIC 43, see section 3.13.1 and 3.13.3

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D, insurance services and outsourced transportation activities.

(9) Exhaustiveness

As described in section 3.7, adjustments were made for activities like construction by households and concealed activities. Furthermore adjustments have been made for agricultural activities regarding to avoid double counting (with the functional estimates for SIC 011- 015), cost fraud and income in kind.

(10) Balancing

Balancing did not lead to any substantial adjustments in this industry. Small adjustments were made based on the confrontation of supply and use of individual products.

3.13.1 Construction buildings, development (SIC 41)

Table 3.13.2 Process table of output, intermediate consumption and value added of construction buildings, development (SIC 41), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	32.707	0	0	0	0	32.707	-1	42	1.422	-10	34.160
Intermediate cons.	24.735	0	0	0	0	24.735	136	124	725	-6	25.714
Value added	7.972	0	0	0	0	7.972	-137	-82	697	-4	8.446

(1) Surveys & censuses

Production, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

An adjustment was made to the SBS-data for very small enterprises. In SBS the very small enterprises are not included in the survey, but estimated on the basis of turnover value from VAT-data and structural data on turnover and costs of the enterprises in the smallest size classes that are surveyed in SBS (cf. section 3.2.2). After confrontation with the data from the Labour Accounts, the estimated value of compensation of employees was found to be too high for the non-surveyed size classes in SBS.

(8) Conceptual

As described in section 3.5, adjustments have been made for fisim, software, R&D, insurance services and outsourced transportation activities. For this industry, the adjustment is mainly fisim and software.

(9) Exhaustiveness

Data obtained from the structural business statistics for repair activities in (mainly) dwellings are incomplete. Adjustments have been made for concealed activities construction for the repair and maintenance of dwellings (output and value added respectively 1249 and 506 million euros). A separate estimate is made in respect of own-account construction of dwellings by households (output and value added respectively 208 and 57 million euros). See section 7.2.3 for more details.

Furthermore, as described in section 3.7, adjustments have been made for agriculture activities regarding to double counting, cost fraud and income in kind.

(10) Balancing

Balancing did not lead to any substantial adjustments in this industry. Small adjustments were made based on the confrontation of supply and use of individual products.

Further information

The main data source is the annual business survey for construction industry. The results of the business survey are confronted with other data sources although the latter cover only part of the relevant construction activities. For example, Statistics on construction buildings permits provide insight in newly built dwellings, statistics on capital formation by businesses and government provide data on the construction of commercial buildings. Ultimately, the figures from the annual structural business survey for construction industry are leading because the other sources are not exhaustive. The supply of building materials is harmonised with the intermediate consumption in construction industry and final uses (exports, consumption of households). The harmonisation indicates no under-coverage as the data on the use of building materials (export, (intermediate) consumption) outweighs the data on material supply.

The business survey separates turnover as main contractor from turnover from subcontracting. The costs of hiring subcontractors are included in the business survey. The turnover data are leading for estimating output of subcontracting. The business survey includes specific questions on exports of construction services. The survey asks for turnover from construction activities abroad and the local expenditures for these activities abroad. According to the guidelines of ESR, this turnover is recorded as domestic output and the local expenditures as intermediate consumption.

3.13.2 Civil engineering (SIC 42)

Table 3.13.3 Process table of output, intermediate consumption and value added of civil engineering (SIC 42), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	15.080	0	0	0	0	15.080	1	21	-22	-30	15.050
Intermediate cons.	10.906	0	0	0	0	10.906	11	24	-101	-8	10.832
Value added	4.174	0	0	0	0	4.174	-10	-3	79	-22	4.218

(1) Surveys & censuses

Production, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

An adjustment was made to the SBS-data for very small enterprises. In SBS the very small enterprises are not included in the survey, but estimated on the basis of turnover value from VAT-data and structural data on turnover and costs of the enterprises in the smallest size classes that are surveyed in SBS (cf. section 3.2.2). After confrontation with the data from the Labour Accounts, the estimated value of compensation of employees was found to be too high for the non-surveyed size classes in SBS.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D, insurance services and outsourced transportation activities. For this industry, the adjustment is mainly fisim and software.

(9) Exhaustiveness

As described in section 3.7, adjustments have been made for agriculture activities to avoid double counting, cost fraud and income in kind.

(10) Balancing

Balancing did not lead to any substantial adjustments in this industry. Small adjustments were made based on the confrontation of supply and use of individual products.

3.13.3 Specialised construction activities (SIC 43)

Table 3.13.4 Process table of output, intermediate consumption and value added of specialised construction activities (SIC 43), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	35.299	0	0	0	0	35.299	-1	97	191	44	35.630
Intermediate cons.	22.139	0	0	0	0	22.139	39	-27	-264	13	21.900
Value added	13.160	0	0	0	0	13.160	-40	124	455	31	13.730

(1) Surveys & censuses

Production, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

An adjustment was made to the SBS-data for very small enterprises. In SBS the very small enterprises are not included in the survey, but estimated on the basis of turnover value from VAT-data and structural data on turnover and costs of the enterprises in the smallest size classes that are surveyed in SBS (cf. section 3.2.2). After confrontation with the data from the Labour Accounts, the estimated value of compensation of employees was found to be too high for the non-surveyed size classes in SBS.

(8) Conceptual

As described in section 3.5, adjustments have been made for fisim, software, R&D, insurance services and outsourced transportation activities. For this industry, the adjustment is mainly fisim and software.

(9) Exhaustiveness

An adjustment was made for concealed activities in specialised construction to households (small maintenance). Output is 236 million euros. Intermediate consumption is assumed to be zero, because the use of building materials and other costs are taken into account in the estimates for the consumption of households or intermediate consumption of owner occupied dwellings.

Furthermore, adjustments have been made for agriculture activities, cost fraud and income in kind (cf. section 3.7). For this industry, the adjustment for intermediate consumption is mainly income in kind.

(10) Balancing

Balancing did not lead to any substantial adjustments in this industry. Small adjustments were made based on the confrontation of supply and use of individual products.

3.14 Wholesale and retail trade; repair of motor vehicles and motorcycles (NACE Rev. 2 Section G)

Table 3.14.1 Process table of output, intermediate consumption and value added of wholesale and retail trade, repair of motor vehicles and motorcycles (section G), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	149323	0	0	0	0	149323	2093	-1602	414	1553	151781
Intermediate cons.	73457	0	0	0	0	73457	1777	-4136	-2233	-660	68205
Value added	75866	0	0	0	0	75866	316	2534	2647	2213	83576

(1) Surveys & censuses

Production, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

The largest adjustments were made in SIC 46 and SIC 47, see section 3.14.2 and 3.14.3.

(8) Conceptual

Adjustments were made for fisim, software, R&D, insurance services, outsourced transportation activities and revaluation.

(9) Exhaustiveness

The largest adjustments were made in SIC 46 and SIC 47, see section 3.14.2 and 3.14.3 for more detailed information on these adjustments.

(10) Balancing

Balancing mainly had an effect in SIC 47, see section 3.14.2 for more details.

At the 2-digit level, section G is subdivided into:

- Wholesale and retail trade and repair of motor vehicles and motorcycles (SIC 45)
- Wholesale trade, except of motor vehicles and motorcycles (SIC 46)
- Retail trade, except of motor vehicles and motorcycles (SIC 47)

3.14.1 Wholesale and retail trade and repair of motor vehicles and motorcycles (SIC 45)

Table 3.14.2 Process table of output, intermediate consumption and value added of wholesale and retail trade and repair of motor vehicles and motorcycles (SIC 45), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	16966	0	0	0	0	16966	0	-22	210	92	17246
Intermediate cons.	9794	0	0	0	0	9794	22	-238	-65	-37	9476
Value added	7172	0	0	0	0	7172	-22	216	275	129	7770

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

The distribution of the SBS turnover and purchase value of the turnover to NR commodity groups of new passenger cars, used passenger cars and used other motor vehicles is based on data of the RAI Documentation Centre (RDC). These RDC-data consist of volumes and catalogue-value of new passenger cars, delivery vans and trucks. Also available are the volumes of used cars.

(7) Data validation

An adjustment was made on the SBS-data for very small enterprises. In SBS the very small enterprises are not included in the survey, but estimated on the basis of turnover value from VAT-data and structural data on turnover and costs of the enterprises in the smallest size classes that are surveyed in SBS (cf. section 3.2.2). After confrontation with the data from the Labour Accounts, the estimated value of compensation of employees was found to be too high for the non-surveyed size classes in SBS. The surplus was shifted to intermediate consumption of all kinds of commodities.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim (value added -148 million euro), software (value added +265 million euro), R&D (value added +47 million euro), insurance services (value added +50 million euro) and revaluation (value added -29 million euro).

(9) Exhaustiveness

An estimate is made for undeclared production of car repair and maintenance services (production +213 million euro, value added +157 million euro), see section 7.2.3 for more details of the estimate. Further, as described in section 3.7, adjustments were made for cost fraud (value added +25 million euro) and income in kind (value added +93 million euro).

(10) Balancing

The overall effect of balancing was an upward adjustment of production in SIC 45 and a downward adjustment of intermediate consumption.

3.14.2 Wholesale trade, except of motor vehicles and motorcycles (SIC 46)

Table 3.14.3 Process table of output, intermediate consumption and value added of SIC 46 Wholesale trade, except of motor vehicles and motorcycles (SIC 46), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Concep-tual	Exhaus-tiveness	Balan-cing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	96.136	0	0	0	0	96.136	1.297	-1.710	-712	1.417	96.428
Intermediate cons.	47.965	0	0	0	0	47.965	1.793	-3.520	-1.800	-559	43.879
Value added	48.171	0	0	0	0	48.171	-496	1.810	1.088	1.976	52.549

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the structural business statistics (SBS). The output of wholesale trade is defined as trade margins. For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

The adjustments are mainly reclassifications for cases in which non-trade revenues were recorded as trade revenues, and non-trade purchases were recorded as trade purchases. These reclassifications did not have an effect on value added, but resulted in changes of output and intermediate consumption. Moreover, an R&D cost of 531 million was reported under a holding company that should have been recorded under a wholesale company. Note that R&D costs are removed from intermediate consumption under conceptual adjustments. Other minor adjustments were based on the quality of the inputs and a multiple year analysis of the structure of the industry.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim (intermediate consumption +852 million euro), software (production +501 million euro, intermediate consumption -603 million euro), R&D (intermediate consumption -896 million euro), insurance services (intermediate consumption -558 million euro), outsourced transportation activities (production and intermediate consumption -2323 million euro) and revaluation (production +113 million euro).

(9) Exhaustiveness

Adjustments were made for income in kind (intermediate consumption -580 million euro), double counting of agricultural activities as explained in section 3.7.1 (production -735 million euro, intermediate consumption -597 million euro), VAT gap (intermediate consumption -521 million euro) and cost fraud (intermediate consumption -118 million euro). See section 3.7 for a general explanation of the adjustments for exhaustiveness.

(10) Balancing

A large upward adjustment of 1584 million euro was made for the production of scrap and waste products. For these products, large differences existed between supply and demand. Analysis of the data of wholesale trade in waste and scrap showed that turnover was in line with demand for scrap and waste. Purchases for resale were in line with turnover but by far

outweighed supply. This led to the conclusion that the inconsistency was caused by an insufficient supply rather than by an overestimated use.

Other balancing adjustments were made to production (-167 million euro) and intermediate consumption (-559 million euro) based on the confrontation of supply and use of individual products.

3.14.3 Retail trade, except of motor vehicles and motorcycles (SIC 47)

Table 3.14.4 Process table of output, intermediate consumption and value added of retail trade, except of motor vehicles and motorcycles (SIC 47), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	36221	0	0	0	0	36221	796	130	916	44	38107
Intermediate cons.	15698	0	0	0	0	15698	-38	-378	-368	-64	14850
Value added	20523	0	0	0	0	20523	834	508	1284	108	23257

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the structural business statistics (SBS). The output of retail trade is defined as trade margins. To this end trade related commodity purchases and sales are surveyed as such. For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

An upward adjustment (production +995 million euro, value added + 849 million euro) was made as adjustment for an omission in the registration of the production of royalty's and licences by a specific enterprise. A negative adjustment (production -200 million euro, intermediate consumption -200 million euro) was made as adjustment for non-consolidated intra concern services.

Further an adjustment was made on the SBS-data for very small enterprises. In SBS the very small enterprises are not included in the survey, but estimated on the basis of turnover value from VAT-data and structural data on turnover and costs of the enterprises in the smallest size classes that are surveyed in SBS (cf. section 3.2.2). After confrontation with the data from the Labour Accounts, the estimated value of compensation of employees was found to be too high for the non-surveyed size classes in SBS. The surplus was shifted to intermediate consumption of all kinds of commodities.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim (intermediate consumption +306 million euro, value added -306 million euro), software (production +263 million euro, intermediate consumption -312 million euro, value added +575 million euro), R&D (production +31million euro, intermediate consumption -68 million euro, value added +99 million euro), insurance services (intermediate consumption -217 million euro, value added +217 million euro), outsourced transportation activities (production -78 million euro, intermediate consumption -78 million euro) and revaluation (production -62 million euro, value added -62 million euro).

(9) Exhaustiveness

In SIC 47 estimates are made for agricultural activities (production -77 million euro, value added -23 million euro), illegal activities such as smuggling, fencing, and sales of heroin, cocaine and XTC (production +947 million euro, value added +900 million euro), see section 7.2.3 for more information. Furthermore, adjustments were made for cost fraud (intermediate consumption -61 million euro, value added +61 million euro) and income in kind (intermediate consumption -212 million euro, value added +212 million euro) See section 3.6 for more information.

(10) Balancing

During the balancing process a large number of products supplied were adjusted. The overall effect was an upward adjustment of production and value added in SIC 47.

3.15 Transportation and storage (NACE Rev. 2 Section H)

Table 3.15.1 Process table of output, intermediate consumption and value added of transport and storage (section H), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	81.741	0	0	0	0	81.741	-6.138	284	67	-8	75.946
Intermediate cons.	52.888	0	0	0	0	52.888	-7.277	-94	-266	30	45.281
Value added	28.853	0	0	0	0	28.853	1.139	378	333	-38	30.665

(1) Surveys & censuses

Production, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

For the major part data validation refers to the adjustments for recharged transport costs paid and received by shipper agents (SIC 52), see section 3.15.4 for details. Furthermore, a state company did not report its fixed capital formation on own account in the survey, but this could be found in its annual report. Government services related to warehousing and support activities for transportation (SIC 52) were adjusted to comply with the standardised calculation of consumption of fixed capital (PIM) at national accounts.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D, insurance services and outsourced transportation activities.

(9) Exhaustiveness

Special estimates were made for the taxi branch (SIC 49) concerning tips. Further, as described in section 3.7, adjustments have been made for cost fraud and income in kind.

(10) Balancing

The largest adjustment was made in SIC 53, see section 3.15.5.

At the 2-digit level, transportation and storage are subdivided into:

- land transport (SIC 49);
- water transport (SIC 50);
- air transport (SIC 51);
- warehousing and support activities for transportation (SIC 52);
- postal and courier activities (SIC 53).

3.15.1 Land transport (SIC 49)

Table 3.15.2 Output, intermediate consumption and value added of land transport (SIC 49), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	26.805	0	0	0	0	26.805	187	88	63	4	27.147
Intermediate cons.	16.575	0	0	0	0	16.575	41	-66	-114	-4	16.432
Value added	10.230	0	0	0	0	10.230	146	154	177	8	10.715

(1) Surveys & censuses

Production, intermediate consumption and value added are based on the structural business statistics (SBS). Land transport (SIC 49) is covered by six separate business statistics relating to rail transport, public road transport, taxi transport, other regulated and unregulated road passenger transport, goods transport and pipeline transport. For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

Two public companies involved in the exploitation of rail tracks are missing in the business statistics. Further for intermediate consumption, in SBS the very small enterprises are not included in the survey, but estimated on the basis of turnover value from VAT-data and structural data on turnover and costs of the enterprises in the smallest size classes that are surveyed in SBS (cf. section 3.2.2). After confrontation with the data from the Labour Accounts, the estimated value of compensation of employees was found to be too high for the non-surveyed size classes in SBS.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D, insurance services and outsourced transportation activities. For this industry, the adjustment is mainly fisim, software and insurance services.

(9) Exhaustiveness

Special estimates are made for the taxi branch (SIC 49) concerning hidden activities and tips (cf. chapter 7). Furthermore, adjustments have been made for cost fraud and income in kind (cf. section 3.7).

(10) Balancing

Balancing did not lead to substantial adjustments in this industry. Small adjustments were made based on the confrontation of supply and use of individual products.

3.15.2 Water transport (SIC 50)

Table 3.15.3 Output, intermediate consumption and value added of water transport (SIC 50), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	9.292	0	0	0	0	9.292	104	14	-1	-2	9.407
Intermediate cons.	6.201	0	0	0	0	6.201	124	34	-28	-30	6.301
Value added	3.091	0	0	0	0	3.091	-20	-20	27	28	3.106

(1) Surveys & censuses

Production, intermediate consumption and value added are based on the structural business statistics (SBS). Water transport (SIC 50) is described in two separate structural business statistics, namely those for shipping and inland shipping. For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

By mistake, for an enterprise a part of the production and intermediate consumption was not included in column 1 ‘Surveys & censuses’.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D, insurance services and outsourced transportation activities.

(9) Exhaustiveness

Furthermore, adjustments have been made for cost fraud and income in kind (cf. section 3.7).

(10) Balancing

Balancing did not lead to substantial adjustments in this industry. Small adjustments were made based on the confrontation of supply and use of individual products.

3.15.3 Air transport (SIC 51)

Table 3.15.4 Output, intermediate consumption and value added of air transport (SIC 51), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	11.176	0	0	0	0	11.176	0	29	18	12	11.235
Intermediate cons.	8.221	0	0	0	0	8.221	-514	-15	-9	6	7.689
Value added	2.955	0	0	0	0	2.955	514	44	27	6	3.546

(1) Surveys & censuses

Production, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

Mainly, this refers to an adjustment of intermediate consumption concerning the used hedged price of jet fuel in the response for structural business statistics. Comparison of the structural business statistics for 2014, 2015 and 2016, combined with data from annual reports, indicated that for 2015 large differences existed between the market price and the (reported) hedged price. Since the market price should be recorded, an adjustment was made.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D, insurance services and outsourced transportation activities.

(9) Exhaustiveness

Further, as described in section 3.7, adjustments were made for cost fraud and income in kind.

(10) Balancing

Balancing did not lead to substantial adjustments in this industry. Small adjustments were made based on the confrontation of supply and use of individual products.

3.15.4 Warehousing and support activities for transportation (SIC 52)

Table 3.15.5 Output, intermediate consumption and value added of warehousing and support activities for transportation (SIC 52), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	28.981	0	0	0	0	28.981	-6.429	125	-13	-9	22.655
Intermediate cons.	18.671	0	0	0	0	18.671	-6.934	-56	-92	-76	11.513
Value added	10.310	0	0	0	0	10.310	505	181	79	67	11.142

(1) Surveys & censuses

Production, intermediate consumption and value added are based on the structural business statistics (SBS). The structural business statistics in respect of supporting transport activities involve several separate surveys relating to loading, unloading and transfer; storage; land transport services; water transport services; airports and other air transport services; dispatchers, ship brokers, freighting, weighing and measuring. For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

For the major part this refers to the adjustments for recharged transport costs paid and received by shipper agents. Companies that only mediate the transport of goods, recorded the cost of the complete transportation contract as both output and input in the structural business statistics. In this case only mediation services have to be recorded and thus an adjustment is made in both production and intermediate consumption.

Furthermore, a state company did not report its own account fixed capital formation in the survey, but this could be found in its annual report. The output of government services relating to land (SIC 52) produced by this state company has also been adjusted. The output is equal to the sum of the costs for which the consumption of fixed capital is calculated using the PIM method.

(8) Conceptual

In the Dutch national accounts opening and closing balances of inventories are adjusted for holding gains and losses to accurately measure changes in inventories. However, there are no steps taken to exclude holding gains and losses from output of storage companies because they are not the owners of the stored goods. These companies produce only the storage services.

As described in section 3.5, adjustments were made for fisim, software, R&D, insurance services and outsourced transportation activities.

(9) Exhaustiveness

Adjustments were made for cost fraud and income in kind (cf.section 3.7).

(10) Balancing

Balancing did not lead to any substantial adjustments in this industry. Small adjustments were made based on the confrontation of supply and use of individual products.

3.15.5 Postal and courier activities (SIC 53)

Table 3.15.6 Output, intermediate consumption and value added of postal and courier activities (SIC 53), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	5.487	0	0	0	0	5.487	0	28	0	-13	5.502
Intermediate cons.	3.220	0	0	0	0	3.220	6	9	-23	134	3.346
Value added	2.267	0	0	0	0	2.267	-6	19	23	-147	2.156

(1) Surveys & censuses

Production, intermediate consumption and value added are based on the structural business statistics (SBS). The post and courier activities structural business statistics cover a number of separate surveys, relating to national and local postal services and courier services. For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D, insurance services and outsourced transportation activities.

(9) Exhaustiveness

Adjustments were made for cost fraud and income in kind (cf. section 3.7).

(10) Balancing

In the business statistics, a large postal company incorrectly declares its costs without VAT. That is why during the balancing process a significant adjustment was made to the intermediate consumption for the missed VAT amount. Further adjustments were made based on the confrontation of supply and use of individual products.

3.16 Accommodation and food service activities (NACE Rev. 2 Section I)

Table 3.16.1 Process table of output, intermediate consumption and value added of Accommodation and food service activities (SIC I), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	22.911	0	0	0	0	22.911	1	64	1.246	64	24.286
Intermediate cons.	12.714	0	0	0	0	12.714	13	-47	-120	-102	12.458
Value added	10.197	0	0	0	0	10.197	-12	111	1.366	166	11.828

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

Adjustments for data validation are due to rounding.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D, insurance services and outsourced transportation activities.

(9) Exhaustiveness

Estimates were made for concealed production and for tipping. See sections 3.16.1 and 3.16.2 for details. Adjustments have also been made for illegal activities. Furthermore, as described in section 3.7, adjustments were made for cost fraud and income in kind. See section 3.16.1 and 3.16.2 for more information.

(10) Balancing

Balancing did not lead to substantial adjustments in this industry. A lot of different small adjustments were made based on the confrontation of supply and use of individual product groups.

3.16.1 Accommodation services (SIC 55)

Table 3.16.2 Process table of output, intermediate consumption and value added of the combined SIC 55 Accommodation services, 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	6.292	0	0	0	0	6.292	0	25	-12	6	6.311
Intermediate cons.	3.380	0	0	0	0	3.380	9	-18	-59	-72	3.240
Value added	2.912	0	0	0	0	2.912	-9	43	47	78	3.071

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

Adjustments for data validation are due to rounding.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D, insurance services and outsourced transportation activities.

(9) Exhaustiveness

Small adjustments for tipping were made. Since, in particular in hotels, electronic and credit card payments are frequent, it is hard to hide payments and tips for tax authorities. The amounts also appear in the employers administrative data and, consequently, in the business statistics. Next to that the adjustment for double counting in illegal activities (prostitution in this case) results on balance in a negative total adjustment in this industry. See for more information section 7.2.3.

Furthermore adjustments were made for cost fraud and income in kind (cf. section 3.7).

(10) Balancing

Balancing did not lead to any substantial adjustments in this industry. Small adjustments were made based on the confrontation of supply and use of individual product groups.

3.16.2 Food and beverage serving services (SIC 56)

Table 3.16.3 Process table of output, intermediate consumption and value added of the combined SIC 56 Food and beverage serving services, 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	16.619	0	0	0	0	16.619	1	39	1.258	58	17.975
Intermediate cons.	9.334	0	0	0	0	9.334	4	-29	-61	-30	9.218
Value added	7.285	0	0	0	0	7.285	-3	68	1.319	88	8.757

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

Adjustments for data validation are due to rounding.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D, insurance services and outsourced transportation activities.

(9) Exhaustiveness

Adjustments were made for concealed production (production +280 million euro, value added +231 million euro), tipping (production and value added +501 million euro) and illegal activities, mainly cannabis (production +482 million euro, value added +471 million euro). For more information see section 7.2.3.

Furthermore adjustments were made for cost fraud (intermediate consumption -28 million euro) and income in kind (intermediate consumption -71 million euro).

(10) Balancing

Balancing did not lead to any substantial adjustments in this industry. Small adjustments were made based on the confrontation of supply and use of individual product groups.

Further information

Output and input in this industry is recorded gross. This means that the value of output includes the value of the food, beverages, etc. consumed (food and drink services), while it is also included in intermediate consumption (the actual goods).

3.17 Information and communication (NACE Rev. 2 Section J)

Table 3.17.1 Process table of output, intermediate consumption and value added of information and communication (section J), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	56393	0	0	0	0	56393	4331	1391	47	266	62428
Intermediate cons.	29831	0	0	0	0	29831	4234	-220	-458	-428	32959
Value added	26562	0	0	0	0	26562	97	1611	505	694	29469

(1) Surveys & censuses

Production, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

The largest adjustments were made in SIC 59 and 62, see section 3.17.2 and 3.17.5.

(8) Conceptual

The largest adjustments were made in SIC 62, mainly for software and R&D. See section 3.17.5 for more details.

(9) Exhaustiveness

Again, the largest adjustments were made in SIC 62, mainly for income in kind, see section 3.17.5.

(10) Balancing

Balancing had a relatively small effect in section J. The largest adjustments were made in SIC 61 and 62.

Section J consists of the following SIC-groups:

58 Publishing
59 Motion picture, video and television programme production

60 Movies, TV and radio
61 Telecommunication
62 Support activities in the field of IT
63 Information service activities

3.17.1 Publishing (SIC 58)

Table 3.17.2 Process table of output, intermediate consumption and value added of publishing (SIC 58), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	5389	0	0	0	0	5389	10	50	0	183	5632
Intermediate cons.	2996	0	0	0	0	2996	17	-71	-22	-56	2864
Value added	2393	0	0	0	0	2393	-7	121	22	239	2768

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

An adjustment was made on the SBS-data for very small enterprises. In SBS the very small enterprises are not included in the survey, but estimated on the basis of turnover value from VAT-data and structural data on turnover and costs of the enterprises in the smallest size classes that are surveyed in SBS (cf. section 3.2.2). After confrontation with the data from the Labour Accounts, the estimated value of compensation of employees was found to be too high for the non-surveyed size classes in SBS. The surplus was shifted to intermediate consumption of all kinds of commodities.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim (intermediate consumption +68 million euro, value added -68 million euro), software (production +48 million euro, intermediate consumption -110 million euro, value added +158 million euro), R&D (value added +85 million euro), insurance services and outsourced transportation activities.

(9) Exhaustiveness

As described in section 3.7, adjustments were made for income in kind (value added +21 mln.) and cost fraud.

(10) Balancing

Balancing led to substantial adjustments in this industry. Adjustments were made based on the confrontation of supply and use of individual product groups. Differences in sources on commodity level (supply versus demand) have led to adjustments in this industry. Especially the supply of typical commodities in SIC 17, SIC 18 and SIC 58 was smaller than demand,

which led to upward adjustments on production and downward adjustments on intermediate consumption in this SIC.

3.17.2 Motion picture, video and television programme production (SIC 59)

Table 3.17.3 Process table of output, intermediate consumption and value added of video and television programme production (SIC 59), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	2724	0	0	0	0	2724	2039	81	48	-39	4853
Intermediate cons.	1618	0	0	0	0	1618	2011	95	-9	-28	3687
Value added	1106	0	0	0	0	1106	28	-14	57	-11	1166

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

Adjustments were made for large licencing and royalty flows of a couple of big worldwide enterprises. These flows were missing in the SBS-data for these enterprises. Further, an adjustment was made on the SBS-data for very small enterprises. In SBS the very small enterprises are not included in the survey, but estimated on the basis of turnover value from VAT-data and structural data on turnover and costs of the enterprises in the smallest size classes that are surveyed in SBS (cf. section 3.2.2). After confrontation with the data from the Labour Accounts, the estimated value of compensation of employees was found to be too high for the non-surveyed size classes in SBS. The surplus was shifted to intermediate consumption of all kinds of commodities.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim (value added -15 million euro), software, R&D and insurance services. Next to that an additional estimate was included for originals (see below), which led to an additional value added of 63 million euros.

(9) Exhaustiveness

Adjustments were made for cost fraud, income in kind and illegal production of pirate copies (value added € 48 million). See section 7.2.3. for more details.

(10) Balancing

Balancing did not lead to substantial adjustments in this industry. Adjustments were made based on the confrontation of supply and use of individual product groups.

Further information

Originals are a part of the output of this branch. This output often remains uncovered in the (SBS) data sources. Therefore, the output of originals is estimated separately with the help of annual reports from collective management organizations such as "het Filmfonds".

The output of originals is estimated based on production costs (Dutch Films and documentaries), the flow of royalties (Dutch Television formats) and assumptions (Dutch Television Drama). In this regard the following products are distinguished:

- *Films and documentaries*: the estimate of gross fixed capital formation of films is based on production costs. Data are provided by "het Filmfonds". The annual report of this organisation shows the production costs of all Dutch films that were subsidized by this agency (in practice these are all Dutch movies). Production costs are also available for all documentaries and animated movies subsidized by "het Filmfonds". International (co)productions are excluded from the estimate of investments except when these productions are subsidized too, but such subsidized productions are exceptional.
- *Television formats*: Since 2007 royalty receipts are part of the SBS questionnaire. This refers only to royalties of enterprises in the SIC 60 (radio and television) but not to the SIC 59 (films).
- *Television drama*: Dutch television drama is hardly ever repeated in subsequent years and normally will not be sold abroad. This estimate is therefore based on the assumption that gross fixed capital formation in this case will be approximately 1 per cent (expert guess) of total production value.

3.17.3 Movies, TV and radio (SIC 60)

Table 3.17.4 Process table of output, intermediate consumption and value added of programming and broadcasting activities (SIC 60), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	1910	0	0	0	0	1910	0	131	0	31	2072
Intermediate cons.	1081	0	0	0	0	1081	2	77	-5	-61	1094
Value added	829	0	0	0	0	829	-2	54	5	92	978

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

Adjustments for data validation are due to rounding.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software (production +12 million euro, value added +18 million euro), R&D and insurance services. Next to that an additional

estimate was included for originals (see SIC 59 above), which led to an additional value added of 114 million euros.

(9) Exhaustiveness

Adjustments were made for cost fraud and income in kind. See section 7.2.3. for more details.

(10) Balancing

Balancing did not lead to substantial adjustments of production and intermediate consumption in this industry. Value added however, as accumulated result of all individual adjustments, was adjusted upwards by 92 million euros. The adjustments were made based on the confrontation of supply and use of individual product groups.

3.17.4 Telecommunication (SIC 61)

Table 3.17.5 Process table of output, intermediate consumption and value added of telecommunication (SIC 61), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	15129	0	0	0	0	15129	0	189	0	108	15426
Intermediate cons.	7927	0	0	0	0	7927	9	42	-42	-55	7881
Value added	7202	0	0	0	0	7202	-9	147	42	163	7545

(1) Surveys & censuses

Data on output, intermediate consumption and value added are all based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

An adjustment was made on the SBS-data for very small enterprises. In SBS the very small enterprises are not included in the survey, but estimated on the basis of turnover value from VAT-data and structural data on turnover and costs of the enterprises in the smallest size classes that are surveyed in SBS (cf. section 3.2.2). After confrontation with the data from the Labour Accounts, the estimated value of compensation of employees was found to be too high for the non-surveyed size classes in SBS. The surplus was shifted to intermediate consumption of all kinds of commodities.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim (intermediate consumption +187 million euro, value added -187 million euro), (own account) software (production +136 million euro, value added +243 million euro), R&D and insurance services.

(9) Exhaustiveness

Adjustments were made for income in kind and cost fraud (cf. section 3.7).

(10) Balancing

Balancing did not lead to substantial adjustments of production and intermediate consumption in this industry. Value added however, as accumulated result of all individual adjustments, was adjusted upwards by 163 million euro The adjustments were made based on the confrontation of supply and use of individual product groups.

3.17.5 Support activities in the field of IT (SIC 62)

Table 3.17.6 Process table of output, intermediate consumption and value added of support activities in the field of IT (SIC 62), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	28343	0	0	0	0	28343	2230	854	-1	-46	31380
Intermediate cons.	14411	0	0	0	0	14411	2142	-354	-365	-221	15613
Value added	13932	0	0	0	0	13932	88	1208	364	175	15767

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

Non-response of a relatively new, fast growing large enterprise was wrongly imputed in SBS. The data for this enterprise were adjusted on the basis of information that was received afterwards. Output and intermediate consumption were adjusted upwards by 1,9 billion and 1,8 billion euros respectively. The remainder of the adjustments under data validation are mainly due to an adjustment for an enterprise for which the survey data were erroneously not included in the SBS source data. Smaller adjustments to intermediate consumption were made because of internal inconsistencies in the SBS-data between the total amount of intermediate consumption and the more detailed specifications of it. Finally, an adjustment was made to the SBS-data for very small enterprises (intermediate consumption +109 million euro, value added -109 million euro). In SBS the very small enterprises are not included in the survey, but estimated on the basis of turnover value from VAT-data and structural data on turnover and costs of the enterprises in the smallest size classes that are surveyed in SBS (cf. section 3.2.2). After confrontation with the data from the Labour Accounts, the estimated value of compensation of employees was found to be too high for the non-surveyed size classes in SBS. The surplus was shifted to intermediate consumption of all kinds of commodities.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim (intermediate consumption +225 million euro, value added -225 million euro), (own account) software (production +843 million euro, intermediate consumption -255 million euro, value added +1098 million euro), R&D (intermediate consumption -339 million euro, value added +343 million euro), insurance services (intermediate consumption -84 million euro, value added +84 million euro) and

outsourced transportation activities (production -21 million euro, intermediate consumption -21 million euro).

(9) Exhaustiveness

Adjustments were made for cost fraud (intermediate consumption -24 million euro, value added +24 million euro) and income in kind (intermediate consumption -333 million euro, value added +333 million euro), see section 3.7).

(10) Balancing

Balancing led to substantial adjustments of value added in this industry (+175 mln.). Adjustments were made based on the confrontation of supply and use of individual product groups. In general, supply of many commodities was smaller than demand for those goods. This led to negative adjustments on intermediate consumption and/or positive adjustments on production. As a result value added was adjusted upwards.

3.17.6 Information service activities (SIC 63)

Table 3.17.7 Process table of output, intermediate consumption and value added of information service activities (SIC 63), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	2898	0	0	0	0	2898	52	86	0	29	3065
Intermediate cons.	1798	0	0	0	0	1798	53	-9	-15	-7	1820
Value added	1100	0	0	0	0	1100	-1	95	15	36	1245

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

The response of an enterprise was wrongly not included in SBS. The data of this enterprise (production 52 million euro, intermediate consumption 30 million euro) were added to the outcome of SBS afterwards under data validation. Further, an adjustment was made to the SBS-data for very small enterprises (intermediate consumption +22 million euro, value added -22 million euro). In SBS the very small enterprises are not included in the survey, but estimated on the basis of turnover value from VAT-data and structural data on turnover and costs of the enterprises in the smallest size classes that are surveyed in SBS (cf. section 3.2.2). After confrontation with the data from the Labour Accounts, the estimated value of compensation of employees was found to be too high for the non-surveyed size classes in SBS. The surplus was shifted to intermediate consumption of all kinds of commodities.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim (intermediate consumption +17 million euro, value added -17 million euro), (own account) software (production +85 million euro, value added + 106 million euro), R&D and insurance services.

(9) Exhaustiveness

Adjustments were made for income in kind (intermediate consumption -13 million euro, value added +13 million euro (cf. section 3.7) and cost fraud.

(10) Balancing

Balancing did not lead to substantial adjustments in this industry. Adjustments were made based on the confrontation of supply and use of individual products.

3.18 Financial and insurance activities (NACE Rev. 2 Section K)

This section presents the production account and the estimation methods of NACE 64 Financial institutions, except insurance and pension funding (section 3.18.1), NACE 65 Insurance and pension funding (section 3.18.2), and NACE 66 Other financial services (section 3.18.3). Table 3.18.1 presents the process table for output, intermediate consumption and value added, from source data to final estimate, of all financial institutions (NACE section K).

Table 3.18.1 Process table of NACE 64-66 output, intermediate consumption and value added, 2015 (million euros)

	Basis for NA Figures						Adjustments				
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	Final estimate
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	0	0	33385	44692	0	78077	3646	5095	116	-41	86893
Intermediate cons.	0	0	27359	3543	0	30902	2513	2409	-366	-1059	34399
Value added	0	0	6026	41149	0	47175	1133	2686	482	1018	52494

One of the main sources for production and intermediate consumption is a survey of the Dutch Central Bank (DNB) called 'Directe RApportage' (DRA). Several institutional units which are part of NACE 64 or 65 report both on a quarterly and yearly basis to DNB. On a yearly basis DNB compiles the profit and loss accounts of these financial institutions. With respect to production and intermediate consumption, the DRA source contains the reporting units of investment funds (S.124), special purpose entities (S.127), insurance companies (S.128) and pension funds (S.129). Another major source is the Social Economic report (SE), used for MFIs (monetary financial institutions). For the estimation of the OFIs (other financial institutions) the profit and loss account in annual reports is particularly used.

The sources and different adjustments are discussed in more detail in the following subsections.

3.18.1 Financial institutions, except insurance and pension funding (SIC 64)

Table 3.18.2 Process table of NACE 64 output, intermediate consumption and value added, 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	0	0	14463	36452	0	50915	1812	4447	0	-31	57143
Intermediate cons.	0	0	16328	0	0	16328	587	2330	-234	-387	18624
Value added	0	0	-1865	36452	0	34587	1225	2117	234	356	38519

(3) Combined data

NACE 64, Financial institutions except insurance and pension funding, consists of the following activities:

- 6411 Central banking
- 6419 Other monetary intermediation, including Money Market Funds (MMFs)
- 6420 Financial holdings
- 6430 Investment funds
- 6491 Financial leasing
- 6492 Other credit granting (mortgage banks and building funds, municipal credit banks and commercial finance companies, participation companies, bill-brokers and other credit granting)
- 6499 Other financial intermediation.

Below information is given on the data used for the estimates of each activity. In section 3.17.1.1 the estimates of fees and commissions are described, while in section 3.18.1.2 the calculation of FISIM, financial services indirectly measured, is elucidated.

NACE 6411 Central banking

Data on the Dutch Central Bank are obtained from their annual accounts. These provide a formal report on the reporting year, which includes a profit and loss account. The annual accounts becomes available four months after the end of the reporting year. The data are reliable and no adjustments are required. Production is estimated as sum of costs (intermediate consumption and compensation of employees).

NACE 6419 Other monetary intermediation

Data source for other Monetary Financial Institutions (MFIs) is the 9008 SE source (Social Economic report), via which the largest banks report to the Dutch Central Bank. In 2015 these banks had a market share of 96 per cent; data are grossed up to get estimates for the total population. The 9008 SE source contains the profit and loss accounts and provides data on fees and commissions, income from renting real estate, and business costs (intermediate consumption and compensation of employees). The production of Financial Intermediation Services Indirectly Measured is estimated using a model type approach (see section 3.18.1.2).

NACE 6420 Financial holdings

The main part of NACE 6420 consists of Special Purpose Entities. A Special Purpose Entity (SPE) is a part of a non-resident enterprise group located in the Netherlands, that gathers financial resources from the rest of the world and funds non-resident entities of the enterprise group on their own account. The SPEs located in the Netherlands are mainly holding assets of non-resident subsidiaries and play an important part in the financial activities of the mother companies within the scope of mergers, takeovers and raising capital. SPEs are characterized by voluminous current and property transactions, disproportional to their productive activities in the Netherlands. Their main reason of existence is tax planning.

The statistical source for SPEs is the DRA-survey conducted by De Nederlandsche Bank (DNB), the Dutch Central Bank. On an annual basis an almost exhaustive data set is obtained from more than 14 thousand reporting entities. This survey contains information on export and import of royalty and licence services, fees and commissions, and business costs. This source is supplemented with the data from Labour Accounts on wages and social premiums (see section 4.8).

The production of NACE 6420 financial holdings is estimated as the sum of costs. The costs reported in DRA are primarily the intermediate consumption of intercompany services. The compensation of employees is also part of the costs. The production of financial holdings is divided into fees and commissions, royalty and licence services, and intercompany services.

Fees and commissions

Revenues on and costs for fees and commissions are available in the DRA survey.

Royalty and licence services

SPEs that are the economic owners of intellectual property (film rights etc) are classified in sector S.11 and NACE 77. Those SPEs who are not the economic owner of the IP on their balance sheet and are only the legal owner of the IP in order to funnel revenues from other units within the group are classified in NACE 6420 and S.12.

Production of royalty and licence services consists of two parts, related to international trade and the domestic market. The production of royalty and licence services by SPEs related to international trade should be valued as the margin of exports and imports (source: Task Force on the recording of certain activities of multinationals in national accounts 2009, and then also Task Force on Holdings and SPEs, 2012). Within NACE 6420 more royalties and licences are imported than exported. This negative balance (2,391 mln) is recorded as intermediate consumption of royalty and licence services. Production of royalty and licence services with the counterparty rest of the world is set to zero.

Domestic production of royalty and licence services is reported in DRA. In 2015 domestic production was 153 mln.

Intercompany services

Production of intercompany services is the balancing item to ensure that total production of financial holdings is equal to the sum of the costs.

NACE 6430 Investment funds

Investment funds (sector S.124) report to the Dutch Central Bank (DRA). The DRA source contains data on rent income from real estate, and business costs. Production of fees and commissions are estimated as sum of the costs related to fees and commissions: management costs (P.2), compensation of employees (D.1), other taxes on production (D.29), taxes on income (D.51).

NACE 6491 Financial lease

Production and intermediate consumption of financial lease and hire purchase contracting is partly derived from profit-and-loss accounts in annual reports. Other financial lease companies are a daughter company of an MFI, but are themselves not an MFI. These non-MFI daughter companies contain financial lease and other financial intermediaries. Total production (849 million euros) and intermediate consumption of all non-MFI daughter companies are estimated, using the same growth rates as monetary financial institutions in non-benchmark years. For financial leasing and hire purchase contracting fisim is estimated. Rental payments are considered to comprise repayment on principal, interest payment and payment for Financial Intermediation Services Indirectly Measured (fisim). The repayment on principal interest payment is considered to be a financial transaction (F.4). Both interest payments and fisim are estimated, based on balance sheet information of leasing companies. The fisim part of the rental payments is treated as intermediate consumption. For a detailed description of fisim, see section 3.18.1.2.

NACE 6492 Other credit granting and NACE 6499 Other financial intermediation

The population of Other Financial Intermediaries (OFIs) is heterogeneous, and contains head offices of financial institutions and thousands of other small businesses. Output and intermediate consumption of OFIs are partly derived from the profit and loss account in annual reports (85 entities in sector S.125 and 80 entities in sector S.126). For all OFIs, the Labour Accounts provide data on wages and social premiums (see section 4.8). Output and intermediate consumption of many small entities are not covered by annual reports. Estimates for small entities are based on wages from the Labour Accounts. For non-benchmark years the non-MFI daughter companies of MFIs are estimated using the same growth rates as monetary financial institutions.

(4) Extrapolation and models

NACE 64 contains the producers of fisim. See section 3.18.1.2 for a detailed description of the fisim calculation.

(7) Data validation

Most costs of SPEs are reported in the DRA survey: fees and commissions expenses, royalty and licence costs, and the intermediate consumption of intercompany services, which consists of intercompany business costs and other intercompany costs. For a small part of intermediate consumption an additional estimate is made. Information in the source data on ‘other domestic costs’ are considered as less reliable, so they are estimated at 17 per cent of intercompany business costs. This percentage is based on time series of the cost structure of SPEs. Intermediate consumption is corrected upwards with 587 million euros.

Investigation on the development of costs for using MMF-services by pension funds has led to an addition of 1.8 bln on the reported services of MMF's for indirect payments which are not reported as costs but as revaluations of the participations in MMF (assets of pension funds).

(8) Conceptual

Conceptual adjustments are made for software (GVA +0,9 bln), spreads (GVA 0,6 bln), R&D (GVA +0,4 bln), intermediate consumption of insurance services (+0,1 bln) and fisim (O +2,5 bln, IC +2,7 bln, GVA -0,2 bln). Section 3.6 explains conceptual adjustments in more detail.

(9) Exhaustiveness

Exhaustiveness adjustments are made for wages in kind.

(10) Balancing

Balancing adjustments are made to match supply and demand of primarily financial services.

3.18.1.1 Fees and commissions

Table 3.18.3 Fees and commissions, 2015 (million euros)

Fees and commissions	**2015 (million euros)**
Production	10.516
Of which	
Central Bank (S.121)	300
Other Monetary Financial Institutions (S.122)	4.359
Money Market Funds (S.123)	8
Non-MMF investment funds (S.124)	3.871
Other Financial Intermediaries (S.125)	1.541
Head offices (S.126)	313
Financial holdings (S.127)	124
Import	3.611
Intermediate consumption	11.484
Of which	
Financial institutions (NACE 64)	3.990
Insurance and pension funding (Nace 65)	3883
Other financial services (NACE 66)	317
Other	3.294
Final consumption	2.197
Export	446
Investment	0

Fees and commissions cover a wide range of services. In the reports of banks (S.122), for instance, the following fees and commissions are distinguished[5]: securities, clearing and settlement, asset management, trust, financial mediation, fiduciary activities, payments services, travel agency services, structured finance, servicing fees from securitization activities, insurance and other fee and commission income.

The fees and commissions received by financial institutions (NACE 64) are produced by different subsectors. Main producers are subsectors S.122, S.124 and S.125. The output of the total bank fees and commissions is partly available in source data (S.122, S.127) and partly estimated, for example as sum of costs (S.121, S.124). Most of the data on fees and commissions are received from the Dutch Central Bank. For the estimation of the OFIs the profit and loss account in annual reports is particularly used. Further, fees and commissions are imported from the Rest of the World. A large part of intermediate consumption concerns mainly financial institutions (investment funds), insurance companies and pension funds.

Investment funds report (in DRA) their management costs. Some of these management costs are attributed to costs related to renting real estate. For non-MMF investment funds, who are the major real estate investor within NACE 64, the operating expenses for real estate are estimated to be 60 per cent of rental income. This percentage is based on the size of costs in other industries that are renting real estate. Intermediate consumption of fees and commissions is determined as total management costs minus investment funds' operating expenses for real estate.

For insurance companies and pension funds the management costs are divided into fees and commissions (60 per cent) and other financial services (40 per cent). The percentages are based on the asset holdings of non-MMF investment fund shares (F.522).

3.18.1.2 Financial Intermediation Services Indirectly Measured (FISIM)

The following method description of fisim has been presented in revised form in the Eurostat Grant "Choosing a method for the deflation of fisim" (Den Boer 2014).

Statistics Netherlands calculates the fisim transactions P.119 (production), P.2B (intermediate consumption), P.31AB (final consumption), P.62B (export), P.72B (import) and P.119C (fisim adjustment on D.41A interest). These transactions are determined per subsector S.11, S.12, S.13, S.14 and S.15. Section A below shows the reference rate that is chosen. Section B explains the calculations to correct for interbank fisim. Section C describes the split between S.14 and S.15.

Fisim is subdivided into fisim on loans *A* (the A from assets) and fisim on deposits *D*. Fisim on loans is calculated by the interest spread on loans times the stock of loans, fisim on deposits is the interest spread on deposits times the amount of deposits.

$$FISIM^t \equiv FISIM^t_A + FISIM^t_D = \sum_{n=1}^{N} p^t_{An} q^t_{An} + \sum_{n=1}^{N} p^t_{Dn} q^t_{Dn} \qquad (1)$$

The stocks of loans q_A and deposits q_D are average stocks derived from the balance sheets. For each type of loan or deposit *n* the average of the stocks at the beginning and the end of period *t*

[5] These types of fees and commissions are also distinguished in the SE 9008 source

is calculated. The interest spread on loans p_A is the difference between the interest rate that banks receive on loans and the reference rate:

$$p_{An}^{t} = r_{An}^{t} - r_{R}^{t} \qquad (2)$$

where r_A is the interest rate on loans and r_R is the reference rate. The interest spread on deposits p_D is the difference between the reference rate and the interest rate that banks pay to customers on their deposits:

$$p_{Dn}^{t} = r_{R}^{t} - r_{Dn}^{t} \qquad (3)$$

r_D being the interest rate on deposits.

The Dutch Central Bank (DNB) publishes interest rates on deposits and loans of households and non-financial corporations (NFC). For the government sector, the 'SE 9008' data (collected by the central bank) gives the profit-and-loss account of banks and provides the amount of interest payments on government loans to monetary financial institutions (MFI). In 2015, the central government subsector paid 0,04 percent on short term loans and 1,22 percent on long term loans. These interest percentages are much lower than the interest rates of NFC, which are respectively 1.85 and 3.13 percent. So, central government could lend at a 'discount' of 1.81 percent on short term loans and 1.91 on long term loans, leading to a relatively low fisim. No discount has been applied to the interest margins on government deposits. This government discount has been applied to the interest margin of all FISIM producers (S.122, S.125, S.2).

A. Reference rate

Statistics Netherlands uses a reference rate that is a weighted average of different market rates. The weights used for the weighted average reference rate are the average stocks of loans and deposits, and depend on maturity and currency. Only the stocks that are both assets and liabilities of financial intermediaries (domestic and abroad) are taken into account. So, these stocks refer to banks/OFIs borrowing from other banks/OFIs or banks/OFIs holding deposits at other banks. The sources of these stocks are the balance sheets of institutional sector accounts. For determining the reference rate the following market rates are used:

- Short-term loans: three-month Euribor
- Long-term loans: latest ten-year government bonds
- Short-term deposits: call money euros area
- Long-term deposits in euros: three-month Euribor
- Long-term deposits in other currency: three-month euro-dollar deposits

Regarding the different currencies, fisim on deposits is calculated separately for each of the important currency groups such as euros and other currency (almost entirely consisting of U.S. dollars). Therefore, the three-month euro-dollar deposits rate is used for fisim on deposits in other currency.

The GNI Committee proposes the use of observed data on interest flows between financial intermediaries. It was investigated whether source data on interest flows between and with sectors S.122 and S.125 and S.2 are available. Unfortunately this is not the case. Therefore using market interest rates as the reference rates is the best practice available given the lack of plausible data. Moreover, it is most common in literature.

B. Interbank fisim

ESA 2010 does not allow the recording of interbank fisim. The term 'interbank' relates to the user sectors S.122 (Banks), S.125 (OFIs) and part of S.2 (Rest of the world). Sector S.2 can be divided into financial intermediaries (FI) and non-financial intermediaries (NFI). By convention, the domestic financial intermediaries (S.122 and S.125) and the financial intermediaries abroad (S.2 FI) do not consume fisim. This means that both assets and liabilities of these financial intermediaries do not belong to the stocks of loans q_A and deposits q_D in formula (1) above. These 'cells' (e.g. deposits assets S.122, liabilities S.2 FI) are only used to determine the weights for the weighted average reference rate. The Dutch Central Bank provides detailed information on the subsectors of S.2. This makes it possible to divide sector S.2 into FI and NFI. Table 3.18.4 gives the shares of S.2 FI and S.2 NFI in the deposits of S.2 (assets) held by S.122. In table 3.18.5 the loans of S.122 to S.2 (liabilities) are divided into S.2 FI and S.2 NFI.

Table 3.18.4 Interbank deposits, share in closing balance sheet 2015, assets S.2 liabilities S.122 (%).

Transaction	Description	S.2 FI	S.2 NFI
AF.22A	Short-term deposits (euros)	53	47
AF.22B	Short-term deposits (other currencies)	24	76
AF.29AA	Saving accounts (euros)	0	100
AF.29AB	Saving accounts (other currencies)	0	100
AF.29BA	Other long-term deposits (euros)	88	12
AF.29BB	Other long-term deposits (other currencies)	89	11

Source: Dutch Central Bank

Table 3.18.5 Interbank loans, share in closing balance sheet 2015, assets S.122 liabilities S.2 (%).

Transaction	Description	S.2 FI	S.2 NFI
AF.41B	Short-term consumer credit	0	100
AF.41C	Other short-term loans	29	71
AF.42B	Real estate loans	0	100
AF.42C	Long-term consumer credit	0	100
AF.42D	Other long term-loans	64	36

Source: Dutch Central Bank

Saving accounts, consumer credit and real estate loans relate only to households abroad, so they do not involve interbank operations. Export of fisim on deposits is multiplied by the share of S.2 NFI in interbank deposits to exclude interbank fisim on deposits. Likewise, export of fisim on loans is multiplied by the share of S.2 NFI in interbank loans to exclude interbank fisim on loans. After adjusting for fisim users in respect of sector S.2, the next step is to determine the fisim producers by splitting sector S.2 into S.2 FI and S.2 NFI. This is only done for loans, since deposits are held by financial intermediaries only. Table 3.18.6 gives the balance sheet shares of S.2 FI and S.2 NFI in other short and long-term loans; in the Netherlands there is no import of consumer credit and real estate loans.

Table 3.18.6 Other loans, share in closing balance 2015, assets S.2 liabilities other subsectors (%).

Transaction		AF.41C		AF.42D	
Description		Other short-term loans		Other long term-loans	
Liabilities		Assets			
Subsector	Description	S.2 FI	S.2 NFI	S.2 FI	S.2 NFI
S.11	Non-financial institutions	62	38	71	29
S.121	Central bank	100	0	100	0
S.122	Banks	100	0	80	20
S.123	Money market funds (MMF)	100	0	100	0
S.124	Non-MMF investment funds	83	17	87	13
S.125	OFIs	99	1	91	9
S.126	Financial auxiliaries	100	0	100	0
S.127	Captive financial institutions and money lenders	77	23	86	14
S.128	Insurance corporations	100	0	0	100
S.129	Pension funds	99	1	100	0
S.13	Government	100	0	100	0
S.14/S.15	Households	100	0	100	0

Source: Dutch Central Bank

For determining the external reference rate, subsector S.2 must also be divided into S.2 FI and S.2 NFI. Regarding the average balances of deposits, the assets of S.2 are multiplied by the balance sheet share of S.2 FI (table 3.18.4) to get interbank deposits. Likewise, the S.2 liabilities of the average balances of loans are multiplied with the balance sheet share of S.2 FI (table 3.18.5) to get interbank loans. Finally, the S.2 assets of the average balances of loans are multiplied by the balance sheet share of S.2 (table 3.18.6) to get interbank loans. The external reference rate is calculated on international interbank loans and deposits.

C. Division of S.14

Sector S.14 households is divided into consumers, house-owners and unincorporated enterprises. The division of sector S.14 into different subsectors is necessary, because of the distinction between final consumption (consumers) and intermediate consumption (house-owners and unincorporated enterprises). In the Sector Accounts balance sheets for 2015 are only available for the aggregate S.14. The stocks of mortgages are totally attributed to house-owners. Deposits and other loans are attributed to consumers and unincorporated enterprises, using their share in interest received (respectively 95 and 5 percent) and interest paid (respectively 93 and 7 percent). Assets are divided using data on interest received, liabilities are divided using data on interest paid. The shares are estimated using statistics on labour income and entrepreneurial income and wealth.

Summarizing, both sub-sectors S.122 (deposit-taking corporations except the central bank) and S.125 (other financial intermediaries, except insurance corporations and pension funds) are included in the calculation of fisim. For sub-sectors S.122 and S.125 the average stocks of loans and deposits are available, with breakdown per sector, from the Flow of Funds accounts. Accrued interest is estimated. These rates are sector-specific, i.e. individually computed for each institutional user sector. They are weighted according to the maturity breakdown. Thus, fisim is calculated separately for each user sector. The internal reference rate is calculated as

the ratio of interest receivable on loans between (and within) S.122 and S.125 to stocks of loans between (and within) S.122 and S.125. Exported fisim is calculated as the sum of fisim on loans granted to non-residents and fisim on the deposits of non-residents. Fisim on loans granted to non-residents is equal to loan stock times (interest rate receivable - external reference rate). Fisim on the deposits of non-residents is equal to deposit stocks times (external reference rate - interest rate payable). Fisim imported by each institutional sector is calculated as the sum of fisim imported for loans and fisim imported for deposits. Fisim imported for loans is equal to loan stocks times (interest rate receivable by non-resident financial intermediaries - external reference rate). Fisim imported for deposits is equal to deposit stocks times (external reference rate - interest rate payable by non-resident financial intermediaries). The external reference rate (used to calculate fisim exports and imports) is calculated as the ratio of interest on loans plus interest on deposits between resident FIs and non-resident FIs, to the stock of loans plus the stock of deposits between resident FIs and non-resident FIs. It is ensured that the flows of interest between and within the subsectors S.122 and S.125 and between resident FIs and non-resident FIs as well as the corresponding stocks of loans and deposits impact the production of fisim only through the internal and external reference rates; there is no allowance for interbank recording of fisim in ESA 2010.

The allocation of fisim (domestically produced and imported) is based on reliable information, also as concerns allocation among the sectors/uses having an impact on GNI: intermediate consumption of General Government and NPISH and intermediate consumption/HFCE within households. Fisim is allocated to households broken down into intermediate consumption (households in their capacity as owners of dwellings and of unincorporated enterprises) and final consumption. The data on loans to households are broken down into dwelling loans, loans to households as owners of unincorporated enterprises and other loans to consumers. The data on deposits of households are broken down into deposits of households as owners of unincorporated enterprises and deposits of individuals. Finally, fisim per subsector is allocated among industries according to the size of their production. Table 3.18.7 gives an overview of fisim on deposits and loans, per ESA 2010 subsector.

After many discussions in Task Forces it has been agreed that negative fisim is possible[6]. The ECB (Colangelo 2012)[7] concludes correctly that "the discussion should not aim at a methodology that excludes negative margins, but rather at *a method which can explain negative margins.* Such negatives may well reflect the economic reality. For instance, the fact that during the financial crisis (especially after the collapse of Lehman Brothers) many European banks were offering (and still do) deposit rates higher than money market rates to improve their liquidity positions is well known. In addition, this does not mean that banks would necessarily make losses on deposits as in many cases direct charges also apply on deposit accounts."

[6] fisim Task Force (2011), *Summary Minutes of the ISWGNA fisim Task Force meeting: July 5-6, 2011, New York*

[7] Colangelo, Antonio (2012), *Measuring fisim in the euro area under various choices of reference rate(s)*, European Central Bank

Table 3.18.7 FISIM, 2015 (million euros)

Transaction	Sector	Deposits	Loans	Total FISIM
Production	Total	-4041	40493	36452
	S.122	-4041	30534	26493
	S.125		9959	9959
Import	S.2	-610	5331	4721
Intermediate consumption	Total	-1578	40651	39073
	S.11	-898	11481	10583
	S.121	0	0	0
	S.122	0	0	0
	S.123	-7	0	-7
	S.124	-28	222	194
	S.125	0	0	0
	S.126	-26	270	244
	S.127A	-331	2825	2494
	S.128	-39	84	45
	S.129	-49	13	-36
	S.1311A	-7	-27	-34
	S.1311B	-5	17	12
	S.1311C	0	0	0
	S.1311D	-3	62	59
	S.1313A	-2	1095	1093
	S.1313B	0	46	46
	S.1313C	-3	14	11
	S.1313D	-4	217	213
	S.1313E	-10	39	29
	S.1313F	-3	54	51
	S.1314	-1	0	-1
	S.14 households	0	23912	23912
	S.14 unincorporated enterprises	-127	182	55
	S.14	-127	24094	23967
	S.15	-35	145	110
Final consumption	S.14 consumers	-2655	2330	-325
Export	S.2	-418	2843	2425

3.18.2 Insurance and pension funding (SIC 65)

Table 3.18.8 Process table of NACE 65 output, intermediate consumption and value added, 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	0	0	18922	0	0	18922	1834	575	116	0	21447
Intermediate cons.	0	0	11031	0	0	11031	1920	69	-59	-475	12486
Value added	0	0	7891	0	0	7891	-86	506	175	475	8961

(3) Combined data

Insurance and pension funding services (no compulsory social security) (NACE 65) consist of different types of insurance companies and pension funds: life insurance companies (incl. insurance in kind and slate clubs), non-life insurance companies (incl. guarantee funds), reinsurance companies and pension funds (incl. early retirement funds).

These companies/funds generate various types of output, the main output being insurance services. Insurance services consist of direct life insurance, direct non-life insurance (including voluntary additional health insurance), reinsurance (incl. indirect life and non-life insurance by life and non-life insurance companies) and pension insurance services.

Health insurers receive an additional 'compensation' from the central government for the extent to which actual total health care expenses (macro-final expenses) exceed the mandatory health insurance related to total budgeted expenses (ex-ante macro costs estimate).

The method for calculating intermediate consumption of insurance companies and pension funds is for all NACE 65 industries similar.

Insurance companies and pension funds report to the Dutch Central Bank (DNB) via the Direct Reporting (DRA) system, which is used as the main source for the industry's estimate for the supply and use tables. Supervisory data are used as an additional information source.

The above mentioned types of insurance services cannot be calculated uniformly; output of life insurance services and pension insurance services is based on the sum of costs (mainly intermediate consumption and compensation of employees), while output of non-life insurance and reinsurance services is based on premiums, premium supplements and (adjusted) claims. The methods of calculating the insurance service output and estimates for all types of insurance are described below. Estimates will be given in section 3.18.2.1.

Methods of calculating insurance output

Life insurance services

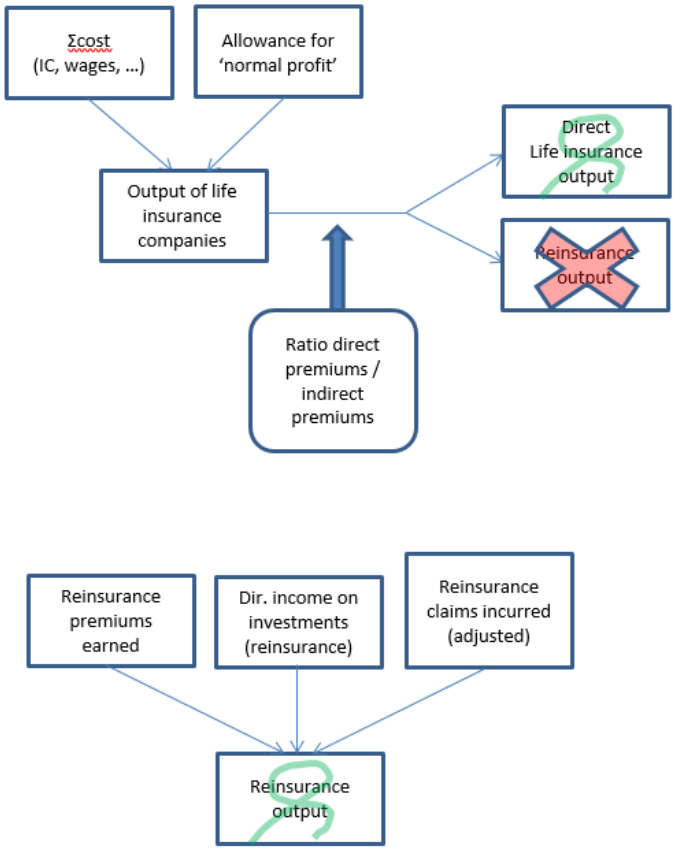
The output of life insurance services is calculated as the sum of costs (intermediate consumption[8] + compensation of employees) plus an allowance for 'normal profit'. Data on the costs are available from the main source DRA. The normal profit is calculated by using the average yield on perpetual bonds (both corporate and government bonds) which is multiplied by the equity of the life insurers. The average yield is calculated with data available from the stock exchange (a separate statistic of Statistics Netherlands). The equity of the life insurers is available in the main data source as well as in the supervisory data from the Dutch Central Bank. The underlying idea of this method is that shareholders of the insurance companies (mostly a financial holding) expect a minimal return on their investment equal to the yield on perpetual bonds. The risk profiles of both these 'securities' do not differ very much, so the expected return also will equally not differ much. The allowance for normal profit is as such understood as an expected profit, but fluctuating in relation to equity and yield levels in each period.

As the sum of cost method for life insurance output is applied and no separate information for cost components of direct life and reinsurance activities of the life insurance corporations are available, the sum of costs for estimating total production of life insurance corporations (direct

[8] Not according to the NA-definition but according to business administration, so including depreciation.

plus indirect) has to be calculated first. In a next step direct life insurance output is separated out from this sum by using a ratio between (direct) life insurance premiums and (indirect) reinsurance premiums received by life insurance corporations. The remaining 'estimate' for reinsurance output is not used, as for reinsurance output ESA2010 prescribes a different valuation method (premiums + direct income on investments -/- adjusted claims). For life insurance corporations data on all of these components are available, so reinsurance output of life insurers is estimated using the preferred method.

The scheme below clarifies the abovementioned:



Pension schemes output:

The calculation of the output of pension schemes is similar to the life insurance service, but without addition of the allowance for 'normal profit', because pension funds do not make any profit. Data are available in DRA.

Non-life insurance service (excl. reinsurance):

Non-life insurance service in The Netherlands is provided by health insurers (only voluntary additional health insurance[9]), other non-life insurers supervised by the Dutch Central Bank and

[9] Mandatory basic health insurance is considered as a social security scheme in National Accounts and government finance statistics (GFS). As a consequence, Statistics Netherlands reroutes all obligatory health care premiums and (basic) health care expenses under the Health Care Insurance Act as government revenues and expenditures. Private health insurance companies are compensated for the financial risk that the actual total health care expenses (macro-final expenses) exceed the total budgeted expenses (ex-ante macro costs estimate);

non-supervised insurers (guarantee funds). The main source DRA provides separate data in the profit and loss account for the additional health insurance.

The output for non-life insurance services is calculated as:

total premiums earned *plus* property income earned on technical reserves

less adjusted claims incurred.

Data on premiums and claims are available from the main source DRA, except for the guarantee funds for which this information is taken from annual reports. Adjusted claims are to be interpreted as expected claims. Statistics Netherlands implemented the concept of expected claims by using the average of the claims, catastrophic losses excluded, over the last 5 years, inflated by the Consumer Price Index (CPI) as published by Statistics Netherlands.

Property income earned on technical reserves attributed to policyholders is derived from direct investment income in the primary income account (plus net income on rentals) minus interest paid. Almost all information is obtained from the main data source for insurers except for dividends and retained earnings attributable to collective investment fund shareholders (D.4431/4432), for which information is taken from the non-MMFs survey (also DRA) including balancing adjustments.

Reinsurance service:

The output of reinsurance is measured the same way as the output of direct non-life insurance. However, there are some transactions peculiar to reinsurance, such as commissions payable to the direct insurer under proportionate reinsurance and profit sharing in excess of loss reinsurance.

Once these are taken into account the output of reinsurance is calculated as:

premiums earned *less* commissions payable

plus premium supplements

minus both adjusted claims incurred and profit sharing.

As earlier mentioned, reinsurance services are not only provided by main reinsurers, but also by 'normal' life and non-life insurers. For all three categories of insurers the output is calculated separately according to the formula above, using DRA data.

Intermediate consumption of the insurance industry

Total intermediate consumption, except the use of reinsurance services, spread and fisim, is derived from reported profit and loss account items in the main source DRA. These items do not match the classification of the product groups of the supply and use tables of Statistics Netherlands, so assumptions and small adjustments are necessary. The explanatory notes with the reporting forms for the DRA source from the Dutch Central Bank give more detail about the content of the concerning profit and loss account items. This makes it possible to make estimates on the level of product groups of the supply and use tables.

the amount of this compensation is determined by the Government sector in NA and is registered as part of the output of the health insurers.

The use of reinsurance services is calculated with exactly the same method as the production, whereas paid reinsurance premiums earned and received claims incurred are available in our main source. Fisim is calculated separately, see section 3.18.1.2.

(7) Data validation

Investigation on the development of costs for using MMF-services by pension funds has led to an addition of 1.8 bln on the reported services of MMF's for indirect costs which are not reported as costs but as revaluations of the participations in MMF (assets of pension funds). And as the production of pension services is calculated as sum of the costs the output of pension funds is increased by the same amount.

(8) Conceptual

Conceptual adjustments are made for R&D (GVA +0,1 bln), spreads (O +0,34 bln, IC +0,36 bln), software (O +0,2 bln, IC -0,2 bln, GVA +0,4 bln) and fisim. Section 3.5 explains conceptual adjustments in more detail.

(9) Exhaustiveness

Adjustments are made for income in kind. It is known that employees in the financial sector receive to some extent discounts on financial services, for instance non-life insurance. The insurance companies therefore receive no premiums, but the insurance service is provided. For this an increase on the non-life insurance output is estimated as 116 million euros in 2015 and the decrease on intermediate consumption for the insurance industry is -64 mln euros (car fuel, car lease, meals/drinks).

(10) Balancing

Balancing adjustments are made to match supply and demand. The output of NACE 65, especially the insurance services, is considered more reliable than the demand. This means that no balancing adjustments are made for the output of NACE 65, but mostly for the intermediate consumption. Only for the reinsurance service, which is solely produced and used by NACE 65 (and imported/exported), demand is considered more reliable than supply. When submitting the figures of NACE 65 for reinsurance services to the supply and use tables, production is already adjusted for imbalances.

Life insurance service

Life insurance services are consumed by households, both domestic and abroad. Domestic consumption by households is calculated as the output of the life insurance service plus import minus export of this service.

Pension insurance service

The same method as applied to the life insurance service is used for the pension insurance services.

Non-life insurance service (excl. reinsurance)

Non-life insurance services are used by almost all industries and consumers, both domestic and abroad (export). When balancing the supply and demand of insurance services, the production by insurers is considered to be more reliable than the sum of intermediate consumption of industries. Import and export, derived from the production of non-life insurance and the ratio between the service and the corresponding premiums, are also considered exogenous in the balancing process. Finally, in order to bridge supply at basic prices and use at purchasers' prices, the supply table contains an column entry for insurance taxes. This information is obtained from government statistics.

To balance the supply and demand, intermediate and final consumption are adjusted. An opposed restriction is that consumption of the insurance services by households must approximately equal 60-65 per cent of the total output value. These shares are determined in consultation with the Dutch Central Bank and the Dutch Association of Insurers. Almost all other consuming industries supply figures for the consumption of non-life insurance services based on the business statistics, which are figures of the paid premiums. Based on these premiums the remaining output is proportionally allocated to the industries.

Reinsurance services

Reinsurance services are used by other (re)insurers and pension funds, both domestic and abroad, but not by households or government. With data from the main data source DRA it is possible to estimate intermediate consumption of these services by insurance industry and pension funds. The concomitant estimation method is in correspondence with output estimations based on the difference between reinsurance premiums paid and reinsurance claims received.

After deriving the export and import of the reinsurance service, using ratios between reinsurance premiums received from abroad and total received reinsurance premiums (and premiums paid abroad and total paid premiums for calculation of the import), there results a discrepancy between the domestic production and the domestic use of reinsurance services. In consultation with the Dutch Central Bank the assumption is made that the calculated use of reinsurance services is more accurate than production. So in the end the production of reinsurance services is adjusted to the intermediate consumption plus export minus import.

3.18.2.1 Estimates of insurance and pension funding

Life insurance service

The output of the life insurance service provided by life insurers in 2015 is calculated based on the following figures:

Intermediate consumption	895 mln	
Compensation of employees	2,856 mln	+
Allowance for 'normal profit'	2,245 mln[10]	+

[10] Q1: equity 34,764 mln, yield 5.43%; Q2: equity 34,971 mln, yield 6.71%; Q3: equity 35,263 mln, yield 6.91%; Q4: equity 35,527 mln, yield 7.12%.

Ratio direct/total premiums	± .9766[11]	*
Output life insurance	5,840 mln	

Export and import of the life insurance service is based on the International Trade Statistics. In 2015 the import is 0 mln and the export is 118 mln euros.

With the calculations above the (domestic) consumption of life insurance services by households can be derived.

Output	5,840	
Import	0 mln	+
Export	118 mln	-
Consumption	5,722 mln	

In addition to the services provided by life insurers, the insurance services provided for insurances in kind (i.e. funeral insurers) are also defined as life insurance service. For this kind of insurances import and export are assumed to be zero, so total output is consumed by domestic households. In 2015 the value of the output and domestics consumption equals 135 million.

Pension insurance service

Pension insurance services provided by pension funds are calculated the same way as life insurance service output, with the exception of allowances for 'normal profit'. For pension insurance services, this profit is set at zero. And because pension funds do not act as reinsurers, there's no ratio between direct and total premiums.

Intermediate consumption	6,067 mln	
Compensation of employees	81 mln	+
Output pension insurance	6,148 mln	

Export and import of the pension insurance service is based on the International Trade Statistics. In 2015 the import is 4 mln and the export is 84 mln euros.

With the calculations above, the (domestic) consumption of pension insurance services by households can be derived:

Output	6,148 mln	
Import	4 mln	+
Export	84 mln	-

[11] 'Plus minus', because the output is calculated per quarter with quarterly data from our main source. The ratio differs slightly per quarter, so finally the sum of quarterly outputs adds up to 5,840 mln.

Consumption	6,068 mln

In addition to the services provided by pension funds, services provided by early retirement funds and the service provided by the SAIP (Foundation for administrating Indonesian pensions) is also included in the pension insurance output. For these funds the Dutch Central Bank does not supply data, so data are alternatively obtained from annual reports. Intermediate consumption by these funds is respectively 14 million and 1 million, as is the output. Export of these services does exist, but explicit figures are not available. Therefore the same ratio based on premiums received from abroad is used as with the pension funds, which results in quite a small export figure of 0.28 million euro's.

Non-life insurance service

For three types of non-life insurers the output is estimated: health insurers (only additional health insurance[12]), other non-life insurers and guarantee funds (not supervised by Dutch Central Bank). The output is calculated as premiums earned plus property income attributed to policy holders less (adjusted) claims incurred. For the guarantee funds the non-adjusted claims incurred are used, because the volatility in the reported claims is very low.

Statistics Netherlands implemented the concept of adjusted claims by using the average of the claims, catastrophic losses excluded, over the last 5 years (2011-2015), inflated by the Consumer Price Index (CPI) as published by Statistics Netherlands.

The following table contains the figures to compute the 2015 non-life insurance output.

[12] Basic health insurance is compulsory and included in the Government sector/industry (section 3.21 and footnote 9)

Table 3.18.9 Compilation of non-life insurance output, 2015 (million euros)

	2011	2012	2013	2014	2015
CPI		1,025	1,025	1,01	1,006
Premiums earned					
Health insurers	4.487	4.663	4.417	4.241	4.370
Other non-life insurers	15.230	15.431	14.663	14.782	14.612
Guarantee funds	221	249	241	286	321
Property income					
Health insurers	137	68	108	145	137
Other non-life insurers	449	418	528	807	229
Guarantee funds	55	79	31	93	51
Claims incurred					
Health insurers	3.866	3.907	3.770	3.853	3.781
Other non-life insurers	9.639	9.573	9.402	9.493	9.641
Guarantee funds	148	178	228	244	198
Adjusted claims					
Health insurers					3.936
Other non-life insurers					9.799
Guarantee funds					198
Output					
Health insurers					571
Other non-life insurers					5.042
Guarantee funds					174
				Total	5.787
		Wages in kind			116
					5.903

Health insurers

The output of the non-life insurance service provided by health insurers in 2015 is calculated with the following figures:

Premiums earned	4,370 mln	
Premium supplements	137 mln	+
Adjusted claims incurred	3,936 mln	-
(Claims incurred 2015)	(3,781 mln)	
Output non-life insurance	571 mln	

For (additional) health insurance, the international trade is assumed to be zero, so all services are expectedly consumed by domestic households.

Other non-life insurers

As mentioned before other non-life insurance corporations provide both non-life insurance services and reinsurance services. In this paragraph only the estimation of non-life insurance services is described. The estimation of reinsurance services provided by other non-life insurance corporations is described in the paragraph on 'Reinsurance service'.

The output of non-life insurance services provided by other non-life insurers in 2015 is calculated with the following figures:

Premiums (direct) earned	14,612 mln	
Premium supplements	229 mln	+
Adjusted claims (direct) incurred	9,799 mln	-
(Claims incurred 2015)	(9,641 mln)	
Output non-life insurance	5,042 mln	

Additionally 116 mln euro is added to the output of non-life insurance as an estimation for salaries in kind (f.i. discounts on non-life insurance premiums).

Export and import of the other non-life insurance service is based on the International Trade Statistics.

In 2015 the import is 262 mln and the export is 475 mln euros.

In addition to the services provided by non-life insurers, the services provided by guarantee funds (motor traffic, travelling, social housing) are also defined as non-life insurance output. For these funds the Dutch Central Bank does not provide data, so data are alternatively derived from annual reports. Output for these funds is 174 million.

With the above mentioned figures in mind, the output plus import and insurance tax minus export is attributed to different users, like households, companies, government, etc. In research projects for the benchmark revision and in consultation with the Dutch Central Bank, it was concluded that 60-65 per cent of the non-life insurance services (health insurance excluded) is purchases as final household consumption. The remaining part is intermediate consumption.

So for 'normal' non-life insurance, health insurance and guarantee funds together, the figures in the supply and uses tables in 2015 are as follows:

Output non-life insurance	5,902 mln	
Import	262 mln	+
Insurance tax	2,375 mln	+
Total supplies	8,539 mln	

Export	475 mln	
Household consumption	5,576 mln	+
Intermediate consumption	2,963 mln	+
Total uses	8,539 mln	

Reinsurance service

Reinsurance services in The Netherlands are not only provided by professional reinsurers, but also by 'normal' life and non-life insurers.

The reinsurance output can initially be estimated as the sum of the reinsurance premiums earned (less commissions payable) and direct income on investments minus adjusted reinsurance claims incurred (and profit sharing); this can be estimated for reinsurance activities of life insurance and non-life insurance corporations and for professional reinsurance corporations. Export of the reinsurance service is based on the International Trade Statistics. In 2015 the export is 238 mln euros.

On the other hand domestic (re)insurance corporations and pension funds are users of reinsurance services, too. Intermediate consumption of reinsurance services can be estimated for each of the concerning 'branches' with the same method as for the output. Import of the reinsurance service is based on the International Trade Statistics. In 2015 the import is 315 mln euros.

Unfortunately domestic supply and use of reinsurance services don't match when calculated with the DRA-source, so in balancing the reinsurance service a choice has to be made which approach (supply/use) is better. In consultation with the Dutch Central Bank, being the main data provider, it was concluded that the intermediate consumption of reinsurance services is more reliable than the estimates of supply. So in the end the output of reinsurance services is estimated as the result of the intermediate consumption plus export minus import.

Notice that for each insurance and pension fund industry in our main source DRA the intermediate consumption of reinsurance services is calculated per quarter, where a calculated negative consumption is corrected to null (zero: no consumption).

The following table contains the 2015 figures for the reinsurance service as production and use.

Table 3.18.10 Compilation of reinsurance output, 2015 (million euros)

	Non-life Insurers	Life Insurers	Ins. in kind	Pension Funds	Reinsurers	Total
Production						
Premiums	123	330			1.081	1.534
Dir. Income on investm.	2	247			28	277
Profit sharing	21	2			285	308
Adjusted claims	108	709			563	1.380
Output	-4	-134			261	123
Export						
Export service						238
Intermediate consumption						
Premiums	1.309	666	24	314	205	2.518
Dir. Income on investm.	60	315	0	187	3	565
Profit sharing	225	84	8	2	54	373
Adjusted claims	851	956	4	706	128	2.645
Interm. Consumption	293	-59	12	-207	26	65
Corrected IC	293	*16*	12	*32*	26	380
Import						
Import service						315
Production = IC + Export -/- Import						**303**

The table below summarizes the 2015 results for all types of insurance services.

Table 3.18.11 Summary of supply and use of all insurance output, 2015 (million euros)

	Life insurance #	Non-life insurance	Reinsurance	Pension Funds	**Total**
Output	5.975	5.902	303	6.163	18.343
Import	0	262	315	4	581
Taxes	0	2.375	0	0	2.375
Total supply	5.975	8.539	618	6.167	21.299
HFCE	5.857	5.576	x	6.083	17.516
IC of market producers and private households	x	2.919	380	x	3.299
IC of non market producers	x	44 *	x	x	44 *
Export	118	475	238	84	915
Total use	5.975	8.539	618	6.167	18.143

 # Including insurances in kind
** Approximated by the ratio between non-life insurance premiums received from non-market producers and total received non-life premiums*

3.18.3 Other financial services (NACE 66)

Table 3.18.12 Process table of NACE 66 output, intermediate consumption and value added, 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	0	0	0	8240	0	8240	0	73	0	-10	8303
Intermediate cons.	0	0	0	3543	0	3543	6	10	-73	-197	3289
Value added	0	0	0	4697	0	4697	-6	63	73	187	5014

(4) Extrapolation and models

Other financial services consist of many different financial auxiliaries: 6611 Administration of financial markets, 6612 Stockbrokers, investment consultants etc., 6619 Trust offices, market makers, mortgage, credit and currency brokers, bank and savings bank agencies etc., 6621 Risk and damage evaluation, 6622 Insurance agents, 6629 Other services in the field of insurance and pension funding (no appraisers and insurance agents); Insurance markets, Actuarial and pension consultancy; management of pension funds, Guarantee funding, Other services related to insurance and pension funding, 6630 Fund management.

Benchmark revision financial auxiliaries (GNI action point)

In the 2015 benchmark revision the financial auxiliaries industry (NACE 66) is benchmarked with the professional, scientific and technical industry (NACE section M). Section M was chosen for the benchmark due to the similarities between it and the financial auxiliaries industry. However not all divisions within section M have been used for the benchmark review; divisions 70, 72 and 75 are excluded due to differences in structure of the industry and value added between them and the financial auxiliaries division.

Estimates of output, intermediate consumption and GVA

The GVA in division 66 is calculated by first analyzing the share of compensation of employees (COE) in total GVA for both division 66 and section M over the period 1995-2015. The average share of COE in GVA of section M (64 per cent) is the benchmark which is then applied to division 66.

The population in division 66 consists of very many small enterprises. It is not possible to estimate the production in this division on the base of this population. Therefore the output has been calculated by applying the output to intermediate consumption ratio of section M (average 2.3).

The ratio of output to intermediate consumption in section M has been calculated as:

$$r_M^t = \frac{P_M^t}{V_M^t}$$

In which r is ratio, P is output and V is intermediate consumption

The estimate for output in division 66 post the 2015 revision has then been calculated as:

$$\hat{P}_{66000}^{2015} = -\frac{\bar{r}_M}{1-\bar{r}_M} \cdot \hat{Y}_{66000}^{2015}$$

Where $\bar{r}$ is the average ratio of output to intermediate consumption in section M over the time period 1995-2015 and Y is the gross value added. An average ratio is used to control for volatilities in the economic cycle.

Intermediate consumption then is calculated as the residual of output and gross value added.

$$\hat{V}_{66000}^{2015} = \hat{P}_{66000}^{2015} - \hat{Y}_{66000}^{2015}$$

Division to NACE code

In order to produce correct detailed information in the supply and use tables and for the sector accounts, estimates of overall output, intermediate consumption and gross value added within division 66 must be broken down into the underlying groups and subclasses. In addition to the 4 digit breakdown included within NACE, Statistics Netherlands uses a 5 digit breakdown in some cases in order to allow for greater detail and clarity.

NACE division 66 is highly diverse, encompassing various services auxiliary to the financial sector. All the groups and subclasses in division 66 belong to the financial auxiliaries subsector (S.126) except market makers (66192) which are classified within the OFIs subsector (S.125).

Using the business register held by Statistics Netherlands the largest statistical units (more than 100 employees) within each group or subclass have been identified and the following variables selected: number of employees, revenue and costs of production. A multiplier has been calculated in order to make the analysis representative for all businesses and not only those with more than 100 employees. This multiplier was calculated as the share of employment in large businesses in total employment within the group or subclass.

Revenue and costs were then calculated for each group or subclass by use of the multiplier and relevant details for the largest businesses.

Finally for each group and subclass of division 66 the share of revenue in the total revenue of division 66 and the share of costs within total costs of division 66 are used to apportion estimates of output and intermediate consumption across all groups and subclasses. GVA per group or subclass was then calculated as the residual of production and intermediate consumption.

Results

This benchmark revision has resulted in new estimates for GVA, output and intermediate consumption in NACE division 66. These estimates have then been allocated to the various groups and subclasses within division 66.

(8) Conceptual

Conceptual adjustments are made for R&D, software and fisim. Section 3.5 explains conceptual adjustments in more detail.

(9) Exhaustiveness

Adjustments for exhaustiveness are made for income in kind.

(10) Balancing

Balancing adjustments are made to match supply and demand of primarily financial services.

Table 3.18.13 Other financial services, 2015 (million euros)

Other financial services	2015 (mln euros)
Production	10124
Of which	
Financial institutions (NACE 64)	1303
Insurance and pension funding (NACE 65)	365
Other financial services (NACE 66)	8230
Other	226
Import	961
Intermediate consumption	7813
Of which	
Financial institutions (NACE 64)	2318
Insurance and pension funding (NACE 65)	4570
Other financial services (NACE 66)	0
Other	925
Final consumption	556
Export	2206
Investment	510

3.19 Real estate activities (NACE Rev. 2 section L, SIC 68)

In 2015, the output of real estate activities (SIC 68) amounted to 84.189 million euros (see table 3.18.1). Intermediate consumption and gross value added (at basic prices) were 44.685 euros million and 39.504 million euros respectively.

Table 3.19.1 Process table of output, intermediate consumption and value added of real estate activities (SIC 68), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	9657	0	15252	58361	0	83270	781	52	114	-28	84189
Intermediate cons.	3664	0	5850	10291	0	19805	-30	25745	-196	-639	44685
Value added	5993	0	9402	48070	0	63465	811	-25693	310	611	39504

(1) Surveys & censuses

Output, intermediate consumption and value added are partly based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(3) Combined data

The column Combined data contains the estimation of housing corporations (SIC's 68201 and 68202). This information is supplied by the Ministry of internal affairs. The data is based on a complete registration of the population of housing corporations in the Netherlands. These activities are not registered in SBS.

In the supply and use tables intermediate consumption of housing corporations is shown together with that of private exploitation of dwellings (SIC 68203). This means that balancing adjustments cannot be explicitly related to public or private proprietors.

(4) Extrapolation and models

The output is estimated with the help of various methods which are discussed in detail in the section 'further information' below.

(7) Data validation

The response of an enterprise was wrongly not included in SBS. The data of this enterprise (production 77 mln., value added 45 mln.) was added to the outcome of SBS afterwards under data validation.

Furthermore a correction was made on the SBS-data for very small enterprises in SIC's 681 & 683. In SBS the very small enterprises are not included in the survey, but estimated on the basis of turnover value from VAT-data and structural data on turnover and costs of the enterprises in the smallest size classes that are surveyed in SBS (cf. section 3.2.2). After confrontation with the data from the Labour Accounts, the estimated value of compensation of employees in SIC68 was found to be too high for the non-surveyed size classes in SBS. The surplus was shifted from value added (-326 mln.) to intermediate consumption (+235 mln.) and production (correction on trade purchases, -91 mln.).

Additionally corrections were made as a result of later updates of the data used in the models described below in sections III and IV.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software (production +53 mln., intermediate consumption -24 mln., value added +77 mln.), VAT (intermediate consumption +2.066 mln., value added -2.066 mln.) and insurance services (intermediate consumption -799 mln., value added +799 mln.). For SIC 68 total fisim as part of intermediate consumption amounts to 24.310 million euros of which 23.912 million euros relates to fisim on mortgages of owner-occupied dwellings (see section 'further information' below).

(9) Exhaustiveness

As described in section 3.7, adjustments have been made for agricultural activities (production -50 mln., value added -17 mln.), income in kind (intermediate consumption -58 mln., value

added +58 mln.), cost fraud (intermediate consumption -22 mln., value added +22 mln.) and elimination of the VAT gap (intermediate consumption -133 mln euro, value added +133 mln, cf. section 7.3). Also an estimation for short term lodging by private house owners was made (see 'further information').

(10) Balancing

Balancing did lead to adjustments on intermediate consumption in this industry. Adjustments were made based on the confrontation of supply and use of individual product groups, especially for construction materials and -services.

Further information

Real estate activities can be sub-divided into the following four (groups of) activities.

I. Immovable property dealings and management and leasing support (SIC's 681 & 683)
II. Leasing of commercial premises (SIC 68204)
III. 'Exploitation' of owner-occupied dwellings
IV. Exploitation of accommodations (SIC's 68201, 68202 and 68203)

Below these (groups of) activities will be discussed.

I. Immovable property dealings and management and leasing support

This first group involves agents and immovable property managers. Their activities relate to:

- purchase and sales of immovable property, sometimes in conjunction with leasing of immovable property (pending sale);
- intermediation in the purchase, sale, rental and leasing of immovable property;
- intermediation in room rental and leasing for more than three months;
- registration of accommodation-seekers and allocation of accommodation, frequently to housing associations;
- intermediation and leasing in respect of houseboat accommodation;
- immovable property valuation and taxation;
- certification of immovable property projects;
- rental arrangements and rent collection in respect of third-party immovable property, sometimes in conjunction with (arrangements for) maintenance of the managed property and domestic administration.

Structural Business Statistics of these two SIC's in the past were based on small, not representative samples. As a result the outcomes varied widely over the years and could not be used. For the reporting year 2015 (and following years) information from corporation tax will be used as information source to estimate the level of output, intermediate consumption and value added. Because of a lack of details in the corporation tax data, the specifications of SBS are used to distribute production and intermediate consumption over the goods and services used in National Accounts.

II. Leasing of non-residential buildings

The second group of activities concerns leasing of non-residential buildings (commercial premises). SIC 68204 is only partly covered by survey data, implying that output of commercial

property rental for SIC 68 cannot be estimated using this source. Structural Business Statistics only describe a small part of the activities in the rental of offices, industrial buildings and shop-property. Investigations revealed that a substantial part of this kind of property is rented out by private persons and foreign investors. Therefore output is estimated using a commodity flow type approach being the balance of non-residential building rentals (intermediate consumption) and rental income of commercial premises by other industries than SIC 68204 (as secondary activities), mainly derived from SBS-data. Estimates for intermediate consumption in this NACE-class are initially based on ratios derived from the above mentioned survey for SIC 68204. Secondly however, these estimates were adjusted downwards based on the large share of private owners that have less costs for maintenance, cleaning, repair, administration and so on. Part of that services is done on own account.

III & IV Exploitation of residential accommodations

Residential accommodation management can be subdivided into two parts, namely property leasing and own-accommodation 'exploitation'. Both parts are initially estimated functionally, i.e. product based for all industries together. This estimate is based on numbers and rental values of rented and owner-occupied dwellings and completed with a number of supplementary estimates. Each of these elements is discussed below.

III Imputed rents for owner occupied dwellings

Next to actually received rents by housing corporations and 'private' landlords (see *IVa* and *IVb* below), dwelling services consist of imputed rents for owner occupied dwellings. The latter requires by definition a model approach for which an EU-regulation exists prescribing the requirements for admitted estimation methods.

From 2012 onwards administrative data on buildings and dwellings are available (Basisregistraties adressen en gebouwen, BAG) providing an overview on the population of real estate in the Netherlands, including characteristics like year of construction, municipality, floor area, capital value, rental or owner occupied. For the benchmark year 2015 the BAG in combination with the Rental survey is the basis for estimating imputed rents of owner occupied dwellings applying the so called stratification model.

In the Netherlands annual (price) change of rents normally takes place on the first of July. The Rental survey is conducted in July of the reporting year and contains both rental data before and after the (price) adjustment. For the calculation of the total paid annual rent in 2015 this implies the sum of the rents of 'T-1' for the first half of 2015 and the sum of the rents after the (price) adjustment on the first of July for the second half of 2015.

<u>Rental survey</u>

Information of the housing stock is combined with that of the 'Rental survey 2015' (huurenquête 2015) that contains the basic rent (i.e. the gross rent minus – if applicable – costs for water, heating, energy, garages and other services for private use) and the capital value (used for tax purposes, WOZ-value) of a sample of dwellings[13]. The basic rent relates to unfurnished

[13] See: Vernieuwing steekproef huurenquête - Jacco Daalmans, Bert van Zanten en Gert-Jan Versteeg (Statistics Netherlands), 28-4-2015

dwellings. In case of rental-free or cheap dwellings the actual rent is adjusted to include the full dwelling service.

BAG (Basisregistraties Adressen en Gebouwen)

Box 3.1 Information on the BAG (The Register Adresses and Buildings)

Name of survey:	Register adresses and buildings
Link to surveys undertaken at the European level:	INSPIRE
Reporting units:	Smallest area for working or living, located within a building. Provides also areas assigned for berth or stand. All objects provide one or more addresses.
Periodicity:	Continuously
Time of availability of results:	Changes will be updated by the community in the register within five days after they took place. The register is used and delivered each month to Statistics Netherlands.
Sampling frame:	No sampling, total population
Survey is compulsory or voluntary?	Compulsory for communities to update the register. Compulsory for Statistics Netherlands to use the register.
Main features of survey methodology:	-
Population size:	Approximately 10 million objects/addresses and 12 million buildings.
Sample size:	Not applicable, BAG is a register.
Survey response rate:	Not applicable, BAG is a register.
Method used to impute for missing data:	Not applicable, BAG is a register.
Variable used for grossing-up to the population:	Total population is provided
Sample coverage, as % in terms of variable used for grossing-up:	Total population, BAG is a register
Main variables collected:	The database contains information from the moment of concession until the moment a building cease to exists. Main variables: Location of object, berth, stand and building, address, main purpose for use (i.e.

	residential or other use), useful living area, construction year.
Further adjustments made to the survey data:	Derivation whether it's a new object or a changed object. Correction for anomalies in the objects history of existence or main purpose of use.

The reference date of the BAG is the first of January of the reporting year. In order to get the best possible estimates an average between the BAGs of 2015 and 2016 is used.

Given the characteristics of the Rental survey and the BAG imputed rents for owner occupied dwellings, the estimates are as follows:

- First half of 2015: BAG 2015 and T-1 rents from the Rental survey of 2015
- Second half of 2015: BAG 2016 and T-rents from the Rental survey of 2015

This implies that the stratification model will be estimated using both T-1 and T rents.

In the Netherlands the market for rental dwellings consist of two parts. The strongly regulated rental of dwellings by housing corporations aimed at (relatively) low-income tenants and a 'private' landlords operating in the competitive part of the market. Only the latter are selected from the Rental survey and used for estimating with the stratification model.

Stratification model

For estimating imputed rents a stratification of dwellings is made in 80 classes:

(1) Regional classification

- North, Noord: Friesland, Groningen, Drenthe and Overijssel
- Middle, Midden: Gelderland, Flevoland, Utrecht (excluding Utrecht-stad), Noord Holland (excluding Amsterdam), Zuid Holland (excluding Rotterdam and Den Haag)
- Big cities, Steden: Amsterdam, Rotterdam, Den Haag and Utrecht (stad)
- South, Zuid: Zeeland, Noord Brabant and Limburg

(2) Floor area

- < 50 m2
- 50 -<100 m2
- 100 - 150 m2
- 150 - 200 m2
- > 200 m2

(3) Year of construction

- < 1950
- 1950 -< 1970
- 1970 -< 1990
- >= 1990

In the regression these characteristics are represented by dummy variables as independent variables. As depended variable the net rent is used, i.e. the rent exclusive of all kinds of

additional costs when renting a dwelling. Such costs must not be included in the estimates on imputed rents of owner occupied dwellings.

The equation to be estimated using ordinary least squares:

Net rent = a + b_1 * D-Regio-Noord + b_2 * D-Regio-Zuid + b_3 * D-Regio-Midden + b_4* D-opp-<50 + b_5* D-opp-50-<100 + b_6* D-opp-100-<150 + b_7* D-opp-150-<200 + b_8* D-Bj-<1950 + b_9* D-Bj-1950 -<1970 + b_{10}* D-Bj-1970-<1990

in which:

D-regio: dummies for Region ('Big cities' is default)

D-opp: dummies for Floor area (> 200m2 is default)

D-Bj: dummies for Year of construction (>=1990 is default)

Tables 3.19.2 and 3.19.3 present the results for the estimation of the stratification model with the monthly T-1 and T net rents as dependent variable.

Table 3.19.2 Regression coefficients stratification model using monthly T-1 net rents.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1184,718	2,350		504,230	0,000
	Noord	-126,380	0,788	-0,156	-160,370	0,000
	Zuid	-61,336	0,672	-0,095	-91,297	0,000
	Midden	-62,411	0,630	-0,099	-99,035	0,000
	50	-523,532	2,410	-0,501	-217,238	0,000
	50_100	-350,388	2,270	-0,639	-154,386	0,000
	100_150	-185,611	2,286	-0,320	-81,178	0,000
	150_200	38,554	2,539	0,028	15,183	0,000
	1950	-237,435	0,728	-0,363	-326,098	0,000
	1950_1970	-226,882	0,743	-0,328	-305,486	0,000
	1970_1990	-162,158	0,646	-0,277	-251,087	0,000

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,617[a]	0,381	0,381	215,04006

Table 3.19.3 Regression coefficients stratification model using monthly T net rents.

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1206,400	2,359		511,487	0,000
	Noord	-129,269	0,791	-0,159	-163,406	0,000
	Zuid	-65,224	0,674	-0,101	-96,713	0,000
	Midden	-67,098	0,633	-0,106	-106,063	0,000
	50	-535,284	2,419	-0,512	-221,261	0,000
	50_100	-356,661	2,278	-0,649	-156,547	0,000
	100_150	-191,963	2,295	-0,330	-83,633	0,000
	150_200	30,409	2,549	0,022	11,929	0,000
	1950	-235,121	0,731	-0,359	-321,680	0,000
	1950_1970	-224,250	0,746	-0,324	-300,783	0,000
	1970_1990	-156,588	0,648	-0,267	-241,530	0,000

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,616[a]	0,379	0,379	215,86878

In the BAG a distinction is made by type of dwelling. The relevant types in this case are:

- Residential dwellings
- Dwellings with a practice
- Farms
- Non-residential real estate being partly used as dwelling

Residential dwellings are fully used for 'housing' while the other three partially have a business function which should not be allocated to imputed rent of owner occupied dwellings. Dwellings with a practice are taken into account for 90 per cent, farms for 75 per cent and non-residential real estate partly used as dwelling for 30 per cent.

Next to that for residential dwellings an adjustment is made for vacancies of 3.4 per cent, based on statistics on the use of real estate published by Statistics Netherlands. Table 3.19.4 shows the results for the estimate of owner occupied dwellings.

Table 3.19.4 Imputed rents of owner occupied dwelling using the stratification model, 2015, million euros.

	a. Rental survey 2015 rent 2014 BAG 2015			b. Rental survey 2015 rent 2015 BAG 2015			Average of a and b
	Model	Adjustment for partly dwelling /vacancy	Estimate	Model	Adjustment for partly dwelling /vacancy	Estimate	Estimate NA
100 % residence	40215	0,966	38848	41289	0,966	39885	39366
Residence and practice room	199	0,9	179	211	0,9	190	185
Farm	420	0,75	315	422	0,75	316	316
Non-residential partly in use as dwelling	217	0,3	65	212	0,3	64	64
Total	41051		39407	42134		40455	**39931**

Houseboats and caravans

Next to real estate additional estimates have to be made for houseboats and caravans (used for permanent housing). For both categories it is assumed that all houseboats and caravans are occupied by the owner, implying that there is no rental market.

The number of houseboats in the Netherlands is stable and amounts to 12,000 (Ira Hamming, De Woonbootspecialist[14]). Based on a capital value model (dependent variable: net rent; independent variable: capital value) and an assumed average capital value of a houseboat of 100.000 euros an estimate for the monthly imputed rent amounts to 549 euros. The annual imputed rents are then estimated at 79 million euros.

A similar approach applies for caravans with a permit for a stand. With a population of 8,500 caravans (Bram van Duinen, Woonwagen.nl[15]) and an assumed average capital value of 75,000 euros (monthly imputed rent: 501 euros) the annual imputed rents amount to 51 million euros.

IV Exploitation of accommodations

In the Netherlands the market for rental dwellings consist of two parts. The strongly regulated rental of dwellings by housing corporations, aiming at (relatively) low-income tenants, and the 'private' landlords, operating in the competitive part of the housing market. The estimation of the first part is based on observed data, the estimation of the second part is based on a model.

IVa. Housing corporations (SIC's 68201 and 68202)

Information (specifications) about housing corporations (SIC's 68201 and 68202) is supplied by the Ministry of internal affairs and is based on a complete registration of all housing corporations in the Netherlands.

IVb. Commercial exploitation of dwellings (SIC 68203)

'Private' rental of dwellings

'Private' rental of dwellings is observed as main activity in SBS (SIC 68) and as side activity in other industries. However, SBS of SIC 68 covers the population only partly and therefore cannot be used for estimating private rentals exhaustively.

[14] Algemeen Dagblad, 4-4-2018, page 27.
[15] See footnote 2

A suitable alternative for estimating private rentals is applying the stratification model similar to imputed rents (see section III) based on a combination of the Rental survey (using gross rents as dependent variable) and the BAG.

Tables 3.19.5 and 3.19.6 present the results for the estimation of the stratification model with the monthly T-1 and T gross rents as dependent variable.

Table 3.19.5 Regression coefficients stratification model using monthly T-1 gross rents.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1216,914	2,555		476,213	0,000
	Noord	-143,441	0,850	-0,170	-168,686	0,000
	Zuid	-73,499	0,720	-0,110	-102,060	0,000
	Midden	-73,439	0,675	-0,112	-108,737	0,000
	50	-488,482	2,620	-0,453	-186,461	0,000
	50_100	-330,971	2,471	-0,583	-133,923	0,000
	100_150	-188,306	2,489	-0,313	-75,643	0,000
	150_200	46,579	2,757	0,033	16,898	0,000
	1950	-262,584	0,783	-0,388	-335,541	0,000
	1950_1970	-217,766	0,796	-0,305	-273,603	0,000
	1970_1990	-162,509	0,692	-0,268	-234,796	0,000

a. Dependent Variable: VORIGE_BRUTO_HUUR

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,579[a]	0,335	0,335	230,43748

Table 3.19.6 Regression coefficients stratification model using monthly T gross rents.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1229,584	2,530		485,958	0,000
	Noord	-142,858	0,849	-0,170	-168,336	0,000
	Zuid	-75,584	0,723	-0,113	-104,472	0,000
	Midden	-76,846	0,679	-0,117	-113,233	0,000
	50	-491,143	2,595	-0,453	-189,246	0,000
	50_100	-327,311	2,444	-0,575	-133,920	0,000
	100_150	-184,152	2,462	-0,306	-74,789	0,000
	150_200	46,140	2,735	0,032	16,873	0,000
	1950	-260,368	0,784	-0,384	-332,061	0,000
	1950_1970	-217,387	0,800	-0,303	-271,801	0,000
	1970_1990	-158,733	0,695	-0,261	-228,234	0,000

a. Dependent Variable: BRUTO_HUUR

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,577[a]	0,333	0,333	231,57547

Similar to owner occupied dwellings a distinction is made by type of dwelling for allocating gross rents. Residential dwellings fully used for 'housing' are also fully allocated to gross rents. Dwellings with a practice are taken into account for 90 per cent, farms for 75 per cent and non-residential reals estate partly used as dwelling for 30 per cent.

Next to that for residential dwellings an adjustment is made for vacancies of 3.1 per cent, based on statistics on the use of real estate published by Statistics Netherlands.

Table 3.19.7 shows the results for the estimate of private rentals using the stratification model.

Table 3.19.7 Private rentals using the stratification model 2015, million euros.

	a. Rental survey 2015 rent 2014 BAG 2015			b. Rental survey 2015 rent 2015 BAG 2015			Average of a and b
	Model	Adjustment for partly dwelling /vacancy	Estimate	Model	Adjustment for partly dwelling /vacancy	Estimate	Estimate NA
100 % residence	7252	0,969	7027	7634	0,969	7398	7213
Residence and practice room	56	0,9	50	60	0,9	54	52
Farm	62	0,75	46	62	0,75	46	46
Non-residential partly in use as dwelling	96	0,3	29	95	0,3	28	29
Total	7466		7153	7850		7526	**7339**

Production of private rentals in SIC 68 and other industries

The above-mentioned method provides functional estimates i.e. estimates for the total rented stock of dwellings. However, the exploitation of immovable property occurs in different NACE-classes. In addition to the housing corporations and private letters in SIC 68, the major operators are banks, insurance companies and investment institutions (see table 3.19.8). Rentals on behalf of these bodies are deducted from the above functional estimates to determine the rental income of SIC 68.

Table 3.19.8 Actual rental income of dwellings in other industries (2015, in million euros)

Banks, investment institutions (SIC 64)	148
Insurance companies, pension funds (SIC 65)	108
Real estate developers (SIC 411)	42
Retail trade (SIC 47)	30
Other industries	28 +
Total	356

Housing of students

In the BAG the delineation of dwellings excludes multi-person apartments for students in private rentals. Based on a publication on housing of students (Landelijke Monitor studentenhuisvesting, 2015[16]) it is estimated that 34 per cent of the students live in this type of dwelling. With an average monthly rent of 360 euros (from the same publication) the additional estimate for student housing amounts to:

0.34 * 362,000 (number of students in 2015) * 360 * 12 = 532 million euros.

This estimation does not include multi-person housing of students in apartments of housing corporations. The annual rent of this type of housing is included in the data of the concerning housing corporations (see Combined data).

Freestanding garages and sheds

No directly observed information is available on freestanding garages and sheds. From the BAG a selection is made of real estate with a non-residential function with a floor area in between 10 and 20 square meters and a capital value of less than 35,000 euros. From the BAG additional information is collected on ownership and renting.

Based on information from Statistics Netherlands and the Ministry of internal affairs[17], local newspapers and internet an average monthly rent of 160 euros is estimated. The resulting total annual rent for garages and sheds is:

162,520 (number of garages and sheds) * 160 * 12 = 312 million euros.

Of those garages and sheds 25.5 per cent (79 million euros) is rented by housing corporations and already included in their estimates based on financial data. Private rentals account for 38.5 per cent (120 million euros) and imputed rents for owner occupiers account for 36 per cent (112 million euros). The latter two were added to the estimates for private renting and imputed rents.

Short term lodging by private house owners

[16] ABF Research, Delft, 1-10-2015.
[17] Woon Onderzoek Nederland (WoON) 2015.

The rapid emergence of the sharing economy is made possible by modern information technology. Short term lodging by private house owners is one of the most prominent examples of the sharing economy. Airbnb and other online platforms are online marketplaces enabling people to rent short term lodging from private house owners. The American company Airbnb was established in 2008 and is active in the Netherlands since 2009. Since then the use of Airbnb has grown fast in the Netherlands.

At the moment Statistics Netherlands does not directly collect information on the supply of housing services by Airbnb and other platforms. The information used is obtained from articles in the press and on internet, studies and reports from universities, municipalities, etc.[18]

Combining several sources with data about the number of rented accommodations, the number of spend nights and renting revenues has resulted in an estimate of output, intermediate consumption and value added in 2015 (in million euros).

Output (lodging 215 -/- 51 less imputed rent)	164
Intermediate consumption	50 -
Value added	114

Holiday homes

For the estimates of imputed rents of holiday homes on the economic territory of the Netherlands owned by non-residents a number of data source is available:

- Data from Kadaster
- Statistics Overnight accommodation
- Survey on weekly rent on accommodations in 25 countries (Hometogo)

Data from Kadaster

Kadaster (Cadastre, the land registry and mapping agency) provides information on the number of holiday homes in the economic territory of the Netherlands owned by non-residents, the value and a split by nationality of the owner.

Overnight accommodation; guests, overnight stays, occupancy, key figures

These statistics present an overview of the occupancy of accommodations, the number of guests and their overnight stays in the Netherlands in hotels, motels, boarding houses, apartments with hotel services, youth accommodation and bed & breakfasts with at least 5 sleeping places, campsites with at least 4 pitches and holiday parks and group accommodation with at least 10 sleeping places. The data are broken down by type of accommodation. Data are available from 2012 onwards.

[18] See: Measuring challenges of the sharing economy: the case of Airbnb, Leo Hiemstra (Statistics Netherland). Paper presented at the OECD Working Party on National Accounts, 9-10 november 2017, Paris.

Survey HomeToGo

Internet search machine HomeToGo combines worldwide more than 150 accommodation-sites. This results in an analysis on weekly rent for holiday homes in 25 countries differentiated by season. The results of this survey are used to calculate a weighted average.

Method of estimation

The number of weeks occupied in a quarter is calculated, based on information on the occupancy of accommodations. The number of weeks multiplied by the weekly rent results in the quarterly rent paid / received per holiday home. The weekly rent varies during the year and this is taken into account. Combined with the total number of holiday homes, this results in the total quarterly revenues paid / received.

According to ESA 2010 art 4.60 costs should be deducted:

4.60 Withdrawals from the income of quasi-corporations include the net operating surplus received by residents as owners of land and buildings in the rest of the world, or by non-residents as owners of land or buildings on the economic territory concerned. In respect of transactions in land and buildings carried out on the economic territory of a country by non-resident units, notional resident units are created, in which the non-resident owners own the equity.

These annual maintenance costs are estimated to be 20 per cent of total rents (imputed and actual) of the holiday homes.

Population of holiday homes

The total number of holiday homes in the Netherlands amounted in 2015 to 125.400[19] of which 10% is estimated to be owned by enterprises and 35.000 are owned by non-residents.

Table 3.19.9 Population of holiday homes, 2015

	Number
Total	125400
Owned by enterprises	12540
Privatly owned	112860
of which	
Resident owner	77860
Non-resident owner	35000

Total rents of holiday homes in the Netherlands is estimated at 2.039 million euros of which 624 million euros accounts for imputed rents using BAG-data.

An adjustment is made for double counting for recreational accommodation services in NACE sections I and L For the reporting year 2015 the revenues of recreational accommodation is estimated at 2,039 million euros. Information from the annual reports of the largest corporations operating holiday parks concerning the year 2015 indicates that expert guess of 10% ownership

[19] Recreatiewoningen in Nederland (NVM-rapport "Nederlandse markt voor recreatiewoningen, 2017"), Deskresearch Bureau Stedelijke Planning

by entities classified in NACE 55 (holiday parks) seems plausible. This implies an amount of round about 200 million euros which is covered by SBS data on NACE 55. In the 2015 benchmark estimate for holiday homes, this amount was deducted from the initial estimate total imputed rents of holiday homes in the Netherlands.

To conclude the description of production, in table 3.19.10 a summary of the contributions of different activities leading to in SIC 68 is presented.

Table 3.19.10 Summary of activities leading to production in SIC 68, 2015, million euros.

Domestic production of real estate activities and real estate services in 2015, million euros

Commodities	Owner occupied dwellings	Other real estate activities	Total real estate activities	Other industries	Total
Imputed rent o.o. dwellings	40.746		40.746		40.746
Dwellings	39.931		39.931		
Holiday homes	624		624		
Houseboats and caravans	130		130		
Free standing garages	112		112		
Short term lodging	-51		-51		
Rental of dwellings	120	21.714	21.834	351	22.185
Dwellings		21.182	21.182		
Free standing garages	120		120		
Housing units for students		532	532		
Rental of buildings		16.094	16.094	6.593	22.687
Other real estate services		2.470	2.470	206	2.676
Total real estate services	**40.746**	**40.278**	**81.144**	**7.150**	**88.294**
Accommodation services	1.630	17	1.647		
Short term lodging	215		215		
Holiday homes	1.415	17	1.432		
Other goods and services		1.398	1.398		
Total	**42.496**	**41.693**	**84.189**		

Intermediate consumption

For rented dwellings intermediate consumption is based on annual reports of housing corporations which receive around 80% of the total rental revenue. In the annual reports separate data on expenditure on maintenance and repair are available. Next to other operating costs these are the base for the estimates of intermediate consumption. The ratio of intermediate consumption and production is also used to estimate the intermediate consumption linked to rentals by private owners. The expenses on maintenance and repair are used to make a breakdown into intermediate consumption and gross fixed capital formation in conformity with the national accounts definitions.

In estimating intermediate consumption for owner occupied dwellings the delineation with consumption of households and GFCF is an important issue. Expenses which are usually the responsibility of tenants have to be recorded as consumption of households. In the Netherlands in general expenditure by tenants concerns inside painting, wallpaper, kitchen machinery (oven,

refrigerator etc.) and laundry machines, insurance for furniture, etc. including inside windows. Also maintenance of the garden is part of expenditure by tenants.

The letter is responsible for the regular maintenance and repair of the dwelling including central heating system, ceilings, walls, roof etc. and outside painting. Also the replacement of kitchens (excl. machinery) are expenses of the landlord.

To estimate intermediate consumption of owner-occupiers (see table 3.19.10), reference is made to a survey of the '*Vereniging Eigen Huis*' (Association of Owner-Occupiers), titled 'Grof geld voor onderhoud en verbetering' published in 'Woonpeil', august 2011[20]. This survey distinguishes between the costs of normal maintenance, major repairs and improvements. The latter two items belong to GFCF. The first item concerns expenses to be recorded as intermediate consumptions or as consumption of households. The distinction between these two types of expenses in conformity with the responsibilities of landlords and tenants described above is based on data from the 'Household budget survey' and a commodity flow type approach in the SUT. The estimates for HFCE are based on a mix of the commodity flow method and the 'Household budget survey' and typically include maintenance and repair of dwellings, painting of dwellings and material for the handyman like paint, construction materials, etc. In Table 3.19.11 a global breakdown of intermediate consumption is presented.

Table 3.19.11 breakdown of intermediate consumption and value added for real estate activities, 2015, million euros

Production, intermediate consumption and value added of real estate activities in 2015, million euros

	Owner occupied dwellings	Other real estate activities	Total real estate activities
Production	42.499	41.690	84.189
Intermediate consumption	30.725	13.960	44.685
Maintenance and repair	6.557	7.664	14.221
Financial services	24.054	568	24.622
Real estate services	5	1.762	1.767
Other goods and services	109	3.966	4.075
Value added	11.774	27.730	39.504
Wages and salaries	0	3.462	3.462
Taxes less subsidies on production	1.112	2.698	3.810
Consumption of fixed capital	14.404	11.448	25.852
Net operating surplus	-3.742	10.122	6.380

In intermediate consumption an amount of € 23.912 million is included for fisim on mortgages on owner occupied dwellings. The estimates of fisim are based on data from the balance sheets, interest rates and the reference rate. For the estimate of fisim for the reporting year 2015 concerning domestic banks and OFIs the following data were used:

[20] The outcome of this survey has been reconfirmed by a spokesman of the 'Vereniging Eigen Huis' in march 2017. The costs of normal maintenance of an average owner-occupied dwelling amount to 300 euros a month.

Mortgages of owner occupiers with domestic banks (S.122)

Opening balance sheet	392,292 million euros
Closing balance sheet	413,528 million euros
Average balance sheet	402,910 million euros
Interest rate on mortgages rA	4.11 %
Internal Reference rate rR	0.17 %
Banking service component	3.4 %
Fisim IC = 402.910*3,94%	15,871 million euros

Mortgages of owner occupiers with domestic OFIs (S.125)

Opening balance sheet	212,253 million euros
Closing balance sheet	185,072 million euros
Average balance sheet	198,663 million euros
Interest on mortgages rA	4.11 %
Internal Reference rate rR	0.17 %
Banking service component	3.94 %
Fisim IC = 198,663*3.94 %	7,825 million euros

In addition to this an estimation of fisim on mortgages on owner occupied dwellings concerning foreign banks and OFIs was made.

Mortgages of owner occupiers with Rest of the World (S.2)

Opening balance sheet	5,508 million euros
Closing balance sheet	5,514 million euros
Average balance sheet	5,511 million euros
Interest on mortgages rA	4.11%
Internal Reference rate rR	0.18%
Banking service component	3.93%
Fisim IC = 5.511*3,93%	216 million euros

Total fisim IC of owner-occupiers = 15,871+7,825 +216 = 23,912 million euros.

The remaining 142 million euros Financial services (24,054 – 23,912) concerns services connected with hazard insurances. The latter is based on the capital stock of owner occupied dwellings in combination with data on the ratio of premiums and capital value of dwellings and the ratio of services and premiums. Services connected to fire and theft insurances are not included, as these items fall under consumption of households.

Base year and extrapolation

No 'autonomous' estimates are made for each year because the regression of the stratification model shows a relatively low r-square and does not provide stable results in the course of time, a consequence of the use of the rental survey, which is primarily set up for estimating price changes and not making level estimates. This section provides a description of the calculation method for imputed output of owner occupied dwellings for the benchmark year (2015). For subsequent (non-benchmark) years an extrapolation method is used based on a volume and a price component. The volume change concerns the change in the number of dwellings (per type) caused by newly build, demolition and 'type changes'. Data are derived from the BAG (register of addresses and buildings) kept by the Land Register. The price change is a weighted average of changes in paid rent per type of dwelling (apartment, free standing, semidetached, terraced dwellings). The weighting scheme is based on the composition of the stock of owner occupied dwellings. Adjustments for quality changes are based on information from the Rental survey on the impact of renovations of dwellings.

3.20 Professional, scientific and technical activities (NACE Rev. 2 Section M)

Table 3.20.1 Process table of output, intermediate consumption and value added of professional, scientific and technical activities (section M), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	92546	0	5215	232	0	97993	1319	823	49	-103	100081
Intermediate cons.	51351	0	801	0	0	52152	-237	-726	-910	-1135	49144
Value added	41190	0	4419	232	0	45841	1556	1549	959	1032	50937

(1) Surveys & censuses

Production, intermediate consumption and value added are mainly based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(3) Combined data

For SIC 70 data from SBS were supplemented with other data, see section 3.20.2 for more details.

(4) Extrapolation and models

In SIC 72 a model was used to account for the CFC of own account government GFCF in R&D, see section 3.20.4.

(7) Data validation

The largest adjustments were made in SIC 70, see section 3.20.2

(8) Conceptual

Adjustments are divided over all underlying two digit SIC's. See the next sections for more details.

(9) Exhaustiveness

The largest adjustments were made for income in kind, see the sections per two digit SIC's for more details.

(10) Balancing

Balancing mainly had an effect in SIC 70, see section 3.20.2 for more details.

Section M consists of the following SIC-groups:

69. Legal services, administration, etc.
70. Holding companies (not financial) and management advise
71. Architects, technical services etc.
72. Research and development
73. Advertising and market research
74. Other specialised business services
75. Veterinary activities

3.20.1 Legal services, administration, etc. (SIC 69)

Table 3.20.2 Process table of output, intermediate consumption and value added of legal services, administration, etc. (SIC 69), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	15620	0	0	0	0	15620	0	91	1	-27	15685
Intermediate cons.	5743	0	0	0	0	5743	-161	-232	-269	-54	5027
Value added	9877	0	0	0	0	9877	161	323	270	27	10658

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

An adjustment was made on the SBS-data for very small enterprises. In SBS the very small enterprises are not included in the survey, but estimated on the basis of turnover value from VAT-data and structural data on turnover and costs of the enterprises in the smallest size classes that are surveyed in SBS (cf. section 3.2.2). After confrontation with the data from the Labour Accounts, the estimated value of compensation of employees in SIC69 was found to be too low for the non-surveyed size classes in SBS. The shortfall was shifted from intermediate consumption to value added.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim (intermediate consumption +133 mln, value added -133 million euro), software (production +78 million euro, intermediate consumption -214 million euro, value added +292 million euro), insurance services (intermediate consumption -52 million euro, value added +52 million euro) and R&D.

(9) Exhaustiveness

As described in section 3.7, adjustments were made for income in kind (intermediate consumption -226 million euro, value added +226 million euro) and cost fraud (intermediate consumption -31 million euro, value added +31million euro). Small adjustments have also been made for concealed production.

(10) Balancing

Balancing did not lead to substantial adjustments of intermediate consumption of this industry. On balance negative adjustments were made, based in aligning supply and use of individual product groups. In general demand surpassed supply for a range of goods and services (see also chapter 6).

3.20.2 Holding companies (not financial) and management advise (SIC 70)

Table 3.20.3 Process table of output, intermediate consumption and value added of holding companies (not financial) and management advise (SIC 70), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	43152	0	5215	0	0	48367	2043	386	-8	70	50858
Intermediate cons.	27489	0	801	0	0	28290	-42	-220	-365	-645	27018
Value added	15658	0	4419	0	0	20077	2085	606	357	715	23840

(1) Surveys & censuses

Output, intermediate consumption and value added are mainly based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(3) Combined data

The SBS of SIC 701 does not provide a full coverage of the population. Therefore an additional estimate for the missing small units in SIC 701was made based on the Statistics on the Finances of Enterprise Groups. Total revenue and cost of the missing units were estimated with data from this survey, and more details were based on the production structure of the nearest observed units, in terms of size. Additional production is estimated to be 1361 million euros. Intermediate consumption and value added amount to 450 and 911 million euros respectively.

Moreover, 50.000 entities were incorrectly registered in NACE 642 in the Dutch Statistical Business Register. About two thirds of those entities appeared to be private limited companies without employees, that pay allowances to their owners/large shareholders. Twenty percent of the incorrectly registered entities were private limited companies with only one or two

employees, probably a secretary or other supporting employee. Both of these two groups of entities conceptually belong in NACE 701. The remaining twelve percent of the entities appear to be mainly 'normal' enterprises such as a hairdresser, a jeweler and a web store. They actually belong in other NACE-groups.

Due to this incorrect registration, all those entities were not part of the population of the structural business statistics. At the same time they also lacked in the population of Financial holdings (NACE 642) which is statistically covered by DNB, the Dutch Central Bank. As a consequence the only available information for these entities came from the Labor Accounts.

Because of the type of activities of the involved private limited companies with 0, 1 or 2 employees SN decided to estimate their production as the sum of the paid wages and social security premiums. For these entities the assumption is made that they have no intermediate consumption and no operating surplus.

It was not feasible to examine the economic activities of the twelve percent 'normal' entities and distribute them among NACE-groups. Therefore it was decided to place them in NACE 70, using the structure of the entities in the structural business statistics of NACE 702.

As a result of the described estimations output of NACE 70 increased 3857 million euro, intermediate consumption 351 million euro and value added 3506 million euro. Next to that under the heading surveys & censuses another 400 million euros on output for this branch are recorded. The linked intermediate consumption and value added amount to 36 and 364 million euros respectively.

The results of these calculations are presented here as 'Combined data'.

(7) Data validation

For several enterprises production and/or intermediate consumption were found to be incorrect in the SBS when confronted with other sources, like Trade in Services, Finances of Enterprise Groups Survey, R&D survey or other reports of enterprises that are part of the same multinational enterprise group. In aggregate this led to an increase in value added of 2.429 million euro. For example, expenses on R&D of 531 million that was reported under a holding company should have been recorded under a wholesale company and was thus transferred to SIC 46 (cf. section 3.14.2).

For SIC 702 a adjustment was made to the SBS-data for very small enterprises. In SBS the very small enterprises are not included in the survey, but estimated on the basis of turnover value from VAT-data and structural data on turnover and costs of the enterprises in the smallest size classes that are surveyed in SBS (cf. section 3.2.2). After confrontation with the data from the Labour Accounts, the estimated value of compensation of employees was found to be too high for the non-surveyed size classes in SBS. The surplus (98 million euro) was shifted from value added to intermediate consumption of all kinds of commodities.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim (223 million euro), software (production +352 million euro, intermediate consumption -102 million euro, value added +454 million euro), R&D (production + 51 million euro, intermediate consumption -410 million euro, value added +461million euro) and insurance services (159 million euro).

(9) Exhaustiveness

Adjustments were made for agricultural activities, income in kind (299 million euro) and cost fraud (35 million euro), see section 3.7.

(10) Balancing

Balancing did lead to substantial adjustments of intermediate consumption in this industry. On balance negative adjustments were made, based in aligning supply and use of individual product groups. In general, demand surpassed supply for a range of goods and services (see also chapter 6).

3.20.3 Architects, technical services etc. (SIC 71)

Table 3.20.4 Process table of output, intermediate consumption and value added of legal services, administration, etc. (SIC 71), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	14767	0	0	0	0	14767	24	134	28	-172	14781
Intermediate cons.	6587	0	0	0	0	6587	126	-160	-137	-283	6133
Value added	8180	0	0	0	0	8180	-102	294	165	111	8648

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

Because of internal inconsistency of the SBS figures an adjustment was made. The sum of detailed data on intermediate consumption in SBS did not equal the total amount. The detailed data, which were originally used and are included in the process table under surveys and censuses, were adjusted to align with the observed total amount.

Furthermore, an adjustment was made to the SBS-data for very small enterprises. In SBS the very small enterprises are not included in the survey, but estimated on the basis of turnover value from VAT-data and structural data on turnover and costs of the enterprises in the smallest size classes that are surveyed in SBS (cf. section 3.2.2). After confrontation with the data from the Labour Accounts, the estimated value of compensation of employees was found to be too high for the non-surveyed size classes in SBS. The surplus (106 million euro) was shifted from value added to intermediate consumption of all kinds of commodities.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim (value added -151 million euro), software (production +125 million euro, intermediate consumption -189 million euro, value added +314 million euro), R&D (value added +100 million euro), insurance services (value added +55 million euro) and outsourced transportation.

(9) Exhaustiveness

Adjustments were made for income in kind (value added +111 million euro) and cost fraud (cf. section 3.7). Small adjustments were also made for concealed production.

(10) Balancing

Balancing did lead to substantial adjustments in this industry. Adjustments were made based on the confrontation of supply and use of individual product groups. In general, demand surpassed supply for a range of goods and services (see also chapter 6).

3.20.4 Research and development (SIC 72)

Table 3.20.5 Process table of output, intermediate consumption and value added of research and development (SIC 72), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	4.594	0	0	232	0	4.826	-664	97	-7	13	4.265
Intermediate cons.	2.640	0	0	0	0	2.640	-121	-19	-32	5	2.473
Value added	1.954	0	0	232	0	2.186	-543	116	25	8	1.792

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the structural business statistics (SBS), the Frascati-based R&D survey and the COFOG (administrative records). R&D output is estimated on the basis of the R&D survey, secondary output, intermediate consumption an value added on the basis of SBS results. For more general information on SBS and for specific methods per size class, see section 3.2.2. For more information on the R&D survey see section 5.11. The section below on further information and data validation also provides information on the several aspects of estimating R&D related transactions in national accounts.

(4) Extrapolation and models

The CFC of own account government GFCF in R&D (249 million euros) is recorded as production of government services, see the paragraph “further information” below. More detailed information on the estimation of consumption of fixed capital in the Netherlands is found in section 4.13.

(7) Data validation

A downward adjustment of 664 million was made on output. A large part of this adjustment consists of an adjustment for R&D subsidies (805 million). When completing the questionnaire, part of the companies do not take account of subsidies related to R&D and report this as turnover. This leads to an overestimation of the output because subsidies are included. In addition an upward adjustment of 261 million was made for some R&D units with negative operating surplus. These units are part of a larger company and reported production costs for R&D but did not report any output. Furthermore Intermediate consumption is lowered by 121 million because of a comparison of SBS intermediate consumption of R&D and the R&D survey.

(8) Conceptual

According to ESA 2010 R&D services are generally recorded as gross fixed capital formation. As described in section 3.5, adjustments were made for fisim, software(see section 3.25.1) and insurance services. As an exception R&D purchases in relation to R&D production is registered as intermediate consumption for SIC 72, whereas in all other industries all purchases of R&D services are treated as GFCF. For this industry, the adjustment is mainly fisim and software.

(9) Exhaustiveness

Adjustments were made for cost fraud and income in kind (cf. section 3.7).

(10) Balancing

Balancing did not lead to substantial adjustments.

Further information

Own account production

Own account production (government) output of total R&D is based on the COFOG (government expenditure by function) breakdown. Own account R&D output of government units and non-market units is valued at production costs, however excluding a rate of return to capital.

Consumption of fixed capital of R&D

Consumption of R&D capital (CFC) is estimated applying the Perpetual Inventory Method (PIM). For the SIC 72 a Weibull function with a service life of 12 years is used to estimate mortality rates of R&D assets, and a Winfrey function is used to postulate an age-efficiency pattern. All GFCF of R&D in SIC 72 is done on own account by government units, as defined by COFOG. Purchases of R&D of units used in the process of creating R&D are regarded as intermediate consumption and not as GFCF. Furthermore, the assumption is made that R&D units in the non-financial corporations sector do not produce for own account. All created R&D assets by these units appear in the balance sheet of entities outside SIC 72. More detailed information on the estimation of consumption of fixed capital in the Netherlands is found in section 4.13.

3.20.5 Advertising and market research (SIC 73)

Table 3.20.6 Process table of output, intermediate consumption and value added of advertising and market research (SIC 73), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	8721	0	0	0	0	8721	-35	72	29	14	8801
Intermediate cons.	5730	0	0	0	0	5730	14	-35	-56	-84	5569
Value added	2991	0	0	0	0	2991	-49	107	85	98	3232

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

An adjustment was made to the SBS-data for very small enterprises. In SBS the very small enterprises are not included in the survey, but estimated on the basis of turnover value from VAT-data and structural data on turnover and costs of the enterprises in the smallest size classes that are surveyed in SBS (cf. section 3.2.2). After confrontation with the data from the Labour Accounts, the estimated value of compensation of employees was found to be too high for the non-surveyed size classes in SBS. The surplus (37 million euro) was shifted from value added to intermediate consumption of all kinds of commodities.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim (value added -74 million euro), software (value added +142 million euro), R&D (value added +25 million euro) and insurance services (value added +19 million euro).

(9) Exhaustiveness

Adjustments were made for income in kind (value added +35 million euro) and cost fraud (value added +12 million euro), see section 3.7. Further an adjustment was made for concealed production (value added +32 million euro).

(10) Balancing

Balancing did lead to adjustments in this industry, mainly of intermediate consumption. On balance, negative adjustments were made based on aligning supply and use of individual product groups. In general demand surpassed supply for a range of goods and services (see also chapter 6).

3.20.6 Other specialised business services (SIC 74)

Table 3.20.7 Process table of output, intermediate consumption and value added of other specialised business services (SIC 74), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	4879	0	0	0	0	4879	-49	40	12	4	4886
Intermediate cons.	2851	0	0	0	0	2851	-55	-54	-43	-74	2625
Value added	2028	0	0	0	0	2028	6	94	55	78	2261

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

In the SBS a number of units accounted their trade activities as turnover of services and corresponding purchases of goods as intermediate consumption. Therefore production and intermediate consumption were adjusted.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim (value added -47 million euro), software (value added +73 million euro), R&D (value added +95 million euro), insurance services (value added +9 million euro) and outsourced transportation.

(9) Exhaustiveness

As described in section 3.7, adjustments were made for income in kind (value added +17 million euro) and cost fraud (value added +12 million euro). Adjustments have also been made for concealed production (delivering of newspapers).

(10) Balancing

Balancing did lead to adjustments in this industry, mainly of intermediate consumption. On balance negative adjustments were made based in aligning supply and use of individual product groups. In general, demand surpassed supply of a range of goods and services (see also chapter 6).

3.20.7 Veterinary activities (SIC 75)

Table 3.20.8 Process table of output, intermediate consumption and value added of veterinary activities (SIC 75), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	813	0	0	0	0	813	0	3	-6	-5	805
Intermediate cons.	311	0	0	0	0	311	2	-6	-8	0	299
Value added	502	0	0	0	0	502	-2	9	2	-5	506

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

An adjustment was made to the SBS-data for very small enterprises. In SBS the very small enterprises are not included in the survey, but estimated on the basis of turnover value from VAT-data and structural data on turnover and costs of the enterprises in the smallest size classes that are surveyed in SBS (cf. section 3.2.2). After confrontation with the data from the Labour Accounts, the estimated value of compensation of employees was found to be too high for the non-surveyed size classes in SBS.

(8) Conceptual

As described in section 3.5, adjustments were made for software (value added +9 million euro), fisim and insurance services.

(9) Exhaustiveness

As described in section 3.7, adjustments were made for income in kind and agricultural activities.

(10) Balancing

Balancing did not lead to any substantial adjustments in this industry. Adjustments were made based on the confrontation of supply and use of individual product groups.

3.21 Administrative and support service activities (NACE Rev. 2 Section N)

Table 3.21.1 Process table of output, intermediate consumption and value added of administrative and support service activities (section N), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	62315	0	120	0	0	62435	-1567	341	1707	-15	62901
Intermediate cons.	34494	0	34	0	0	34528	633	-10373	-377	-147	24264
Value added	27821	0	86	0	0	27907	-2200	10714	2084	132	38637

(1) Surveys & censuses

Production, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(3) Combined data

For SIC 78 data from SBS were supplemented with data on job creation programs (SIC 78203), that are not included in SBS. See section 3.21.2 for more details.

(4) Extrapolation and models

In SIC 72 a model was used to account for the CFC of own account government GFCF in R&D, see section 3.20.4.

(7) Data validation

The largest adjustments were made in SIC 77 and 78, see sections 3.21.2 and 3.21.3.

(8) Conceptual

The largest adjustment was related to the registration of the remuneration of temporary workers in the SBS for SIC 78, which is not in line with the national accounts concepts. See section 3.21.3 for more details.

(9) Exhaustiveness

The largest adjustment was made for concealed production in SIC 81, see section 3.21.5 for more details.

(10) Balancing

Balancing had a limited effect in section N.

Section N consists of the following SIC-groups:

77. Renting and leasing of capital goods
78. Employment activities

79. Travel agencies, tour operators, etc.
80. Security and investigation
81. Cleaning activities, gardening, etc.
82. Other business services

3.21.1 Renting and leasing of capital goods (SIC 77)

Table 3.21.2 Process table of output, intermediate consumption and value added of renting and leasing of capital goods (SIC 77), 2015 (million euros)

	Basis for NA Figures						Adjustments				
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	Final estimate
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	11256	0	0	0	0	11256	1853	7	-8	-14	13094
Intermediate cons.	5881	0	0	0	0	5881	364	-674	-47	-12	5512
Value added	5375	0	0	0	0	5375	1489	681	39	-2	7582

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

Supplementary estimates were made for units that were not included in SBS, because at the time of the SBS-survey they were considered as special purpose entities and were classified in SIC 64. In the 2015 revision it was decided that a number of those units, which had large incoming and outgoing flows of royalty and licence fees, should be reclassified from the financial sector to the non-financial sector and from SIC 64 to SIC 77. As a result, production of SIC 77 was adjusted upwards by 2457 million euros and intermediate consumption by 924 million euros.

In addition both production and intermediate consumption were adjusted downwards by 368 million euros. This concerns an adjustment for the gross recording of the use of fuel, that should not be recorded at the leasing company but at the users of the leased vehicles.

Further, an adjustment was made to the SBS-data for very small enterprises. In SBS the very small enterprises are not included in the survey, but estimated on the basis of turnover value from VAT-data and structural data on turnover and costs of the enterprises in the smallest size classes that are surveyed in SBS (cf. section 3.2.2). After confrontation with the data from the Labour Accounts, the estimated value of compensation of employees was found to be too high for the non-surveyed size classes in SBS. The surplus (52 million euro) was shifted to intermediate consumption.

Finally, for a number of companies that incorrectly reported their disinvestments of motor vehicles as output in the SBS a downward adjustment of roughly 300 million euros was made to both production and intermediate consumption, and one enterprise was reclassified from another SIC, leading to an increase of production and intermediate consumption of 70 and 60 million euros respectively.

(8) Conceptual

The downward adjustment on intermediate consumption consists mainly of an adjustment for the motor vehicles tax (416 million euros) that was registered as a cost item in SBS-data, and an adjustment for insurance services (304 million euros). Furthermore, as described in section 3.5, adjustments were made for fisim (100 million euro), software (94 million euro) and R&D.

(9) Exhaustiveness

Adjustments were made for agricultural activities, income in kind (31 million euro) and cost fraud (cf. section 3.7).

(10) Balancing

Balancing did not lead to substantial adjustments in this industry. Adjustments were made based on the confrontation of supply and use of individual product groups.

Further information

Operational lease entails renting out movables (mainly transport equipment) for a restricted period of time. These movable goods remain under economic ownership of the lessor. Operational leasing is registered in both SBS and National Accounts as output of services. Gross fixed capital formation of rented capital goods is recorded at the level of SIC 77 units.

In the SBS of this branch enterprises are asked to report on turnover on rented capital goods, subdivided by different categories of movable goods such as cars, motorcycles, etc. Operational lease is most common among business customers in which case lease services are recorded as intermediate consumption. Nevertheless operational lease services are also privately consumed (private lease) in which case the related expenditures are treated as HFCE (consumers).

3.21.2 Employment activities (SIC 78)

Table 3.21.3 Process table of output, intermediate consumption and value added of employment activities (SIC 78), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	25430	0	120	0	0	25550	-4104	112	279	-14	21823
Intermediate cons.	14702	0	34	0	0	14736	-430	-9683	-203	-104	4316
Value added	10728	0	86	0	0	10814	-3674	9795	482	90	17507

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(3) Combined data

The SBS of this SIC does not contain the data of job creation programs (SIC 78203). The estimate for these programs is based on annual reports of the concerning units.

(7) Data validation

In the SBS a number of units accounted pay rolling activities incorrectly as turnover of sending out services with corresponding payments of wages and social security premiums as value added. In fact the concerned staff is employed at the clients and the units in SIC 78 only receive a fee (net approach). This incorrect way of recording production and value added was adjusted.

(8) Conceptual

In SBS the remuneration of temporary workers is registered as intermediate consumption. In National Accounts this amount is registered as wages and part of Value added. This difference in registration method causes adjustments of 9778 million euro on intermediate consumption (-) and value added (+). Furthermore, as described in section 3.5, adjustments were made for fisim (value added -178 million euro), software (value added + 216 million euro), R&D (value added +16 million euro) and insurance services (value added +43 million euro).

(9) Exhaustiveness

For this industry an additional estimate is made for hidden activities of (unregistered) temporary employment mediation (output 316 million, value added 300 million euro), see also section 7.2.3. As described in section 3.7, also adjustments were made for agricultural activities (output -37 million euro), income in kind (value added +193 million euro) and cost fraud.

(10) Balancing

Balancing did not lead to substantial adjustments in this industry.

3.21.3 Travel agencies, tour operators, etc. (SIC 79)

Table 3.21.4 Process table of output, intermediate consumption and value added of travel agencies, tour operators, etc. (SIC 79), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	10.399	0	0	0	0	10.399	683	143	0	-2	11.223
Intermediate cons.	6.978	0	0	0	0	6.978	686	62	-13	-89	7.624
Value added	3.421	0	0	0	0	3.421	-3	81	13	87	3.599

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

Service fees charged by affiliated companies abroad to a Dutch company with headquarters in the Netherlands, were recorded on a net-basis in revenues and costs in SBS, i.e. the fees were excluded from both revenues and costs. In the national accounts, this transaction has to be recorded on a gross basis. Therefore, the service fees were added to the value of production and

intermediate consumption. Furthermore, some small adjustments were made to intermediate consumption.

(8) Conceptual

As described in section 3.5 conceptual adjustments were made, mainly for software (production +140 million euro, intermediate consumption -36 million euro) and fisim (intermediate consumption +71 million euro).

(9) Exhaustiveness

Adjustments were made for income in kind and cost fraud (cf. section 3.7).

(10) Balancing

Balancing didn't lead to substantial adjustments of intermediate consumption of this industry.

Further information

The data on the economic activities of travel agents, tour operators, etc. are based on the turnover specifications as obtained from the SBS. This questionnaire provides information on the following:

- revenues from organizing tours by tour operators (measured by the full expenditures of travellers), gross approach;
- travel agency commissions (measured by the fees and commissions charged by the agency), net approach;
- income from providing information and booking reservations (SIC 799), net approach.

3.21.4 Security and investigation (SIC 80)

Table 3.21.5 Process table of output, intermediate consumption and value added of security and investigation (SIC 80), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	2165	0	0	0	0	2165	0	6	0	2	2173
Intermediate cons.	801	0	0	0	0	801	0	-13	-18	14	784
Value added	1364	0	0	0	0	1364	0	19	18	-12	1389

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim (-19 million euro), software (+20 million euro), R&D and insurance services.

(9) Exhaustiveness

Adjustments were made for income in kind and cost fraud (cf. section 3.7).

(10) Balancing

Balancing did not lead to substantial adjustments in this industry. Adjustments were made based on the confrontation of supply and use of individual product groups.

3.21.5 Cleaning activities, gardening, etc. (SIC 81)

Table 3.21.6 Process table of output, intermediate consumption and value added of cleaning activities, gardening, etc. (SIC 81), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	8364	0	0	0	0	8364	1	18	1435	8	9826
Intermediate cons.	3656	0	0	0	0	3656	-10	-36	-62	36	3584
Value added	4708	0	0	0	0	4708	11	54	1497	-28	6242

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim (value added -62 million euro), software (value added +74 million euro), R&D, insurance services (value added +23 million euro) and outsourced transportation activities.

(9) Exhaustiveness

Supplementary estimates were made for the concealed production of gardening and cleaning both at enterprises and households (output 1453 million euro, value added 1434 million euro), see also section 7.2.3. As described in section 3.7, also adjustments were made for agricultural activities, income in kind (value added +50 million euro) and cost fraud.

(10) Balancing

Balancing did not lead to substantial adjustments in this industry.

3.21.6 Other business services (SIC 82)

Table 3.21.7 Process table of output, intermediate consumption and value added of other business services (SIC 82), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	4701	0	0	0	0	4701	0	55	1	5	4762
Intermediate cons.	2476	0	0	0	0	2476	23	-29	-34	8	2444
Value added	2225	0	0	0	0	2225	-23	84	35	-3	2318

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

An adjustment was made on the SBS-data for very small enterprises. In SBS the very small enterprises are not included in the survey, but estimated on the basis of turnover value from VAT-data and structural data on turnover and costs of the enterprises in the smallest size classes that are surveyed in SBS (cf. section 3.2.2). After confrontation with the data from the Labour Accounts, the estimated value of compensation of employees was found to be too high for the non-surveyed size classes in SBS. The surplus (24 million euro) was shifted to intermediate consumption.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim (value added -36 million euro), software (value added +104 million euro), R&D and insurance services.

(9) Exhaustiveness

Adjustments were made for agricultural activities, income in kind (value added +23 million euro) and cost fraud (cf. section 3.7). A small supplementary estimate has been made for concealed production.

(10) Balancing

Balancing did not lead to substantial adjustments of intermediate consumption of this industry.

3.22 Public administration and defence; compulsory social insurance (NACE Rev. 2 Section O)

Table 3.22.1 Process table of output, intermediate consumption and value added of Public administration and defence; compulsory social insurance (section O, SIC 84), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	0	57602	0	15284	0	72886	0	1262	0	0	74148
Intermediate cons.	0	27118	0	663	0	27781	1215	1262	-151	0	30107
Value added	0	30484	0	14621	0	45105	-1215	0	151	0	44041

(2) Administrative records

The main data sources are administrative. Production, intermediate consumption and value added are based on data from general government institutions. The main entities included are:

- The State: ministries, Animal Health Fund, BES Fund, Infrastructure Fund, Municipalities Fund, Provinces Fund, VAT Compensation Fund and government agencies;
- Municipalities;
- Provinces;
- Public water boards;
- Local intergovernmental organisations;
- Non-profit institutions and organisations (NPIs) such as Statistics Netherlands (CBS) and the police;
- Social security funds (Health Care Insurance Board (CVZ), Institute for employee benefit schemes (UWV), Social Insurance Bank (SVB), Central administration office special medical costs (CAK), and National Health Care Institute (ZIN)).

The State and its entities, public corporate organisations, provinces, public water boards and social security funds are fully included in the industry Public administration and defence; compulsory social insurance (Section O). Detailed data are provided by the individual organisations. It should be noted that the information is on a cash basis for the State. For output and intermediate consumption no adjustments are made to transform them to accrual data according to ESA2010. The provinces and public water boards provide information via the so-called information for third parties (Iv3) questionnaires which are linked to the annual accounts. These data are on an accrual basis. The social security funds provide annual and infra-annual reports which are on an accrual basis.

The municipalities are broken down into Public administration and a few other industries. These other industries are industrial services (sheltered employment), subsidized education and medical services. The estimates for these other industries are deducted from the subsector totals to arrive at the amounts for Section O. Thus, the public administration category also covers - in addition to local public administration - local school advisory services, music schools, libraries, museums, theatres, sports facilities and environmental services (cleansing) as far as they are an integral part of the budgets of municipalities. The other industries are obtained from Structural Business Statistics. The data on municipalities are provided in a similar fashion as the data on provinces, via the so-called Iv3-questionnaires.

Local intergovernmental institutions and non-profit institutions (NPIs) are classified individually to several industries such as other industrial services (sheltered employment), subsidized education, medical services and environmental services (cleansing). Less than half

of these units are active in public administration and government services. The local intergovernmental institutions provide data through the Iv3 questionnaires. For large non-profit institutions, annual accounts are used for the estimates.

Since all the entities under Section O are classified as non-market producers, the production is equivalent to the total of production costs: compensation of employees, intermediate consumption, consumption of fixed capital formation and other taxes paid minus other subsidies received. Hence, gross value added, defined as the difference between output value and intermediate consumption, is mainly equivalent to compensation of employees and consumption of fixed capital formation.

(4) Extrapolation and Models

Consumption of fixed capital formation (13.9 billion euros) is calculated by applying the PIM to the gross fixed capital formation data mainly provided by government entities.

For some non-profit institutions and organisations (NPIs) belonging to general government, no direct source data for the reporting year 2015 were available to Statistics Netherlands. Estimates are mainly based on data for 2014 and data on grants provided by the State. Production costs were increased by 0.5 billion euros in in this way. Also part of the local intergovernmental institutions is not covered by direct sources due to non-response. They are grossed up by using data of the responding institutions. Extrapolations for this subsector amount to 0.9 billion euros increase in production costs.

(7) Data validation

In the 2015 benchmark revision compensation of employees (D.1) of government units was aligned with data from the labour accounts. From this benchmark revision onwards labour accounts are used for all units in the economy. The primary data source for labour accounts is data from the Dutch Tax Authority. This leads to less added value (1.2 billion euros) and a higher intermediate consumption (P.2). The assumption here is that source data of general government are accurate in measuring total expenditure, but less precise in the distinction between D.1 and P.2. For example, hiring of external (temporary) workers might sometimes not be easily discerned in source data and therefore be wrongly translated to compensation of employees rather than intermediate consumption.

(8) Conceptual

FISIM (1.3 billion euros) is based on source data on stocks of deposits assets held by government entities at financial intermediaries and stocks of loans liabilities provided by financial intermediaries to government entities.

Purchase of software is included under conceptual adjustments. In national accounts it should be recorded as gross fixed capital formation, whereas it is (partially) recorded as costs in the source data. Hence, an adjustment to the source data has to be made which is based on investment data on software gross fixed capital formation covering other industries This reduces the intermediate consumption and production by 1.5 billion euros.

On the other hand, intermediate consumption is adjusted due to imputation of intermediation services by health insurers (1.9 billion euros). Since the basic health insurance under the Health Insurance Act is classified as a social security scheme in Dutch national accounts, premiums (nominal and income-related) should be registered as social contributions (ESA 2010 4.92).

Payments from private health insurance companies to care providers concerning basic health care should be considered as government expenditure, recorded as social benefits in kind (ESA 2010 4.108). Even though the National Health Care Institute (ZIN) does not collect the nominal premiums or pays the social benefits, these entries are considered as government revenue and expenditure. This is called rerouting (ESA 2010 1.73-75). Due to the rerouting, the registration of the Health Care Insurance Act in National accounts does not incorporate the risk adjusted contribution.

Rerouting should not affect the net lending / net borrowing of ZIN. Therefore, the rerouted financial flows and the non-registered risk adjusted contribution should be compensated for. This is done by introducing the fictitious transaction "Purchase of intermediation services" paid by ZIN to the health insurance companies which is the balance of the nominal premiums, social benefits in kind and the risk adjusted contribution. It is recorded as intermediate consumption (ESA2010 3.88) by government. In fact, health insurance companies provide some kind of intermediation services between supply and demand of health care services to government. They will be able to make a profit only through a combination of efficiently purchasing of care, a good match between supply and demand and setting the rate for the nominal premium.

Smaller adjustments relate to gross fixed capital formation related to R&D (mainly the State) which reduces intermediate consumption and output by 0.1 billion euros, and the recording of public private partnerships on government balance sheet (thus increasing gross fixed capital formation) which leads to elimination of the service fees by 0.3 billion euros.

(9) Exhaustiveness

Furthermore, adjustments were made for compensation of employees in kind (cf. section 3.7).

Other remarks

The sources for the general government sector are considered to be highly reliable. Therefore, for industries which are fully part of the general government sector like public administration, no adjustments in the balancing process are generally made for the total of market output, intermediate consumption and the components of gross value added. For industries which only partially belong to the sector government, it is checked that the totals of market output, intermediate consumption and the components of gross value added are below the corresponding values of the parts of these industries that belong to the general government sector. Changes between commodities are allowed as far as they do not influence totals of the above mentioned variables.

3.23 Education (NACE Rev. 2 Section P)

Table 3.23.1 Process table of output, intermediate consumption and value added of NACE Rev. 2 Section P, Education, 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	0	30319	4563	5788	0	40670	400	-459	25	-20	40616
Intermediate cons.	0	7541	1658	0	0	9199	1160	-505	-147	-99	9608
Value added	0	22778	2905	5788	0	31471	-760	46	172	79	31008

3.23.1 Primary, special, secondary, higher education (SIC 852-854)

Table 3.23.2 Process table of output, intermediate consumption and value added of primary, special, secondary, higher education (SIC 852-854), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	0	30319	0	5788	0	36107	0	-507	0	0	35600
Intermediate cons.	0	7541	0	0	0	7541	1160	-507	-115	0	8079
Value added	0	22778	0	5788	0	28566	-1160	0	115	0	27521

(2) Administrative records

Production, intermediate consumption and value added are based on data by DUO, a state agency of the Ministry of Education, Culture and Sciences. All subsidized educational institution (schools and universities) are required to transmit the annual accounts through DUO to the Ministry of Education, Culture and Sciences. The Ministry supervises the subsidized educational institutions, and controls them according to the criteria in ESA para 2.39. As the subsidized educational institutions are mainly financed by the State, they are considered as non-market producers.

Since they are classified under non-market producers, the production is equivalent to the total of production costs: compensation of employees, intermediate consumption, consumption of fixed capital formation and other taxes paid minus other subsidies received. Hence, gross value added, defined as the difference between output value and intermediate consumption, is mainly equivalent to compensation of employees and consumption of fixed capital formation.

Non-subsidized schools and universities are among other forms of education part of a separate industry under section P in the Dutch National accounts.

(4) Extrapolation and Models

Consumption of fixed capital formation (5.8 billion euros) is calculated by applying the PIM to the gross fixed capital formation data provided by DUO.

(7) Data validation

In the 2015 benchmark revision the compensation of employees (D.1) of government units are aligned with data from the labour accounts. From this revision onwards the labour accounts is used for all units in the economy. The primary source for the labour accounts is data from the Dutch Tax Authority. This leads to less added value (1.2 billion euros) and a higher intermediate consumption (P.2). The assumption here is that the source data of the general government unit is accurate in measuring it's total production costs, but less precise in the distinction between D.1 and P.2. For example in the source data of the unit hiring of external (temporary) workers might sometimes mistakenly be part of the compensation of employees.

(8) Conceptual

FISIM (0.1 billion euros) is based on the deposits and loans of educational institutions provided by DUO.

The purchases of goods and services in the source data include software. In national accounts they should be included in gross fixed capital formation. Hence, an adjustment has to be made which is based on software estimates for GFCF for the whole economy (see paragraph 4.13). This reduces the intermediate consumption and production by 0.6 billion euros.

(9) Exhaustiveness

Furthermore adjustments were made for income in kind (cf. section 3.7).

3.23.2 Other education (SIC 855-856)

Table 3.23.3 Process table of output, intermediate consumption and value added of other education (SIC 855-856), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	0	0	4.563	0	0	4.563	400	48	25	-20	5.016
Intermediate cons.	0	0	1.658	0	0	1.658	0	2	-32	-99	1.529
Value added	0	0	2.905	0	0	2.905	400	46	57	79	3.487

Other education (SIC 85.5 and 85.6) can be divided into:

- Sports and recreation education services (SIC 85.51)
- Cultural education services (SIC85.52)
- Driving school services (SIC 85.53)
- Other education services n.e.c. (SIC 85.59)
- Educational support services (SIC 85.6)

Combined data

No exhaustive data sources are available for estimating output, intermediate consumption and value added for these activities. Various sources were used in order to make estimates, among others the statistical business register, labour accounts, information from branch associations, a Statistics Netherlands survey on business training, and annual reports. Below the methods for estimating output, intermediate use and value added are described per sub activity.

Sports and recreation education services (SIC 85.51) and Cultural education services (SIC85.52)

Output estimates for this branch are based on VAT data and data from the Labour Accounts (compensation of employees). Both data sources are linked to the statistical business register . Major missing enterprises are added (based on their annual reports).

For units providing private lessons it is obligatory to register at the chamber of commerce and they are therefore included in the statistical business register and thus included in the estimates of total non-subsidised education.

Driving school services (SIC 85.53)

Output is determined by multiplying the number of supplied driving lessons in 2015 by the average price per lesson. This is based on information of CBR (Centraal Bureau voor Rijvaardigheden). Intermediate use is estimated by multiplying employment (Labour accounts, reporting year 2015) with the ratio between intermediate use and employment based on a business plan of a representative entrepreneur. Compensation of employees is based on information of labour accounts.

Other education services n.e.c. (SIC 85.59)

Output estimates for this branch are based on VAT data and data from the Labour Accounts (compensation of employees). Both data sources are linked to the business register (ABR). Major missing enterprises are added (based on their annual reports). Intermediate use is determined by multiplying employment (Labour accounts, reporting year 2015) with the ratio between intermediate use and employment derived from the production structure of a number of representative companies. Compensation of employees is based on information of labour accounts.

(7) Data validation

Non-financial corporations and NPI's serving households in SIC 852, 853 and 854

Output of non-financial corporations and NPI's serving households in SIC 852, 53 and 854 is included in SIC 855. For the estimation of output, intermediate consumption and value added the same method is used as in SIC 85.59.

(9) Exhaustiveness

Adjustments are made for concealed production (production and value added +25 million euro) and for income in kind (intermediate consumption -22 million euro).

(10) Balancing

Balancing did not lead substantial adjustments of intermediate consumption of this industry. On balance negative adjustments were made aligning supply and use of individual product groups.

3.24 Human health and social work activities (NACE Rev. 2 Section Q)

Table 3.24.4 Process table of output, intermediate consumption and value added of human health and social work activities (section Q), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	0	0	79.452	1.842	0	81.294	-768	425	316	-345	80.922
Intermediate cons.	0	0	25.750	600	0	26.350	40	-191	-494	-1.370	24.335
Value added	0	0	53.702	1.242	0	54.944	-808	616	810	1.025	56.587

(3) Combined Data

Estimates of production, intermediate consumption and value added are mostly based on data supplied by Structural business statistics (SBS) and by Databank DigiMV of the Ministry of Health, Welfare and Sport, with digital annual reports of enterprise groups financed or partly financed through the Health care insurance act and/or the long-term care Act (Wlz, Wet Langdurige Zorg). Most of the sources provide detailed information on output, cost and profits. The latter can be transformed into intermediate consumption and value added.

(4) Extrapolation and Models

In health care not all industries are covered by SBS-type statistics. Production is estimated by using information on labour volume obtained from administrative records of the labour accounts. The following two NACE classes are missing in SBS and DigiMV:

a. NACE 86929: 'Organisations cooperating in the area of healthcare and other healthcare support services.' This SIC comprises 'Umbrella organisations, cooperation and advisory bodies in the area of healthcare' (869291) and 'Other healthcare support services not included elsewhere' (869299).
b. NACE 88999: 'Other social advice, community centres, and cooperative bodies in the field of welfare'.

In the 2015 benchmark revision a revised method for estimating these NACE-classes was introduced.

Both NACE 86929 and 88999 are labour-intensive industries. This implies a direct and stable relationship between output and labour input. Therefore, output estimates of these two industries are based on the volume of labour (in full time equivalents) and calculated as follows:

Production Value (PV) = Labour Volume (LV) * Factor (f)

NACE 86929: The factor (f) is calculated from a sample of enterprises in the NACE 86929 based on the 2015 data.

NACE 88999: The factor (f) is based on data of NACE 88992 Social work and NACE 88993 Local welfare work. These two NACE-classes show many similarities with NACE 88999. Factor (f) is then calculated as the average ratio of Product Value (PV) / Labour Volume (LV) of these two specific NACE-classes.

(7) Data validation

Adjustments were related to implausible source data and to wage subsidies which were included in the production in the source data. Adjustments were made in SIC 86, 87 and 88.

(8) Conceptual

Adjustments were made for fisim and software as described in section 3.5.

(9) Exhaustiveness

A supplementary estimate was made for concealed childcare and babysitting (316 million euros). See section 7.2.3 for more details. Furthermore, adjustments were made for income in kind as described in section 3.7

(10) Balancing

Adjustments were made based on the confrontation of supply and use of individual product groups (see also chapter 6).

3.24.1 Human health activities (SIC 86)

Table 3.24.2 Process table of output, intermediate consumption and value added of human health activities (SIC 86), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	0	0	44.490	1.041	0	45.531	-364	272	0	-56	45.383
Intermediate cons.	0	0	15.541	374	0	15.915	40	-232	-307	-681	14.735
Value added	0	0	28.949	667	0	29.616	-404	504	307	625	30.648

(3) Combined Data

Databank DigiMV

Estimates of production, intermediate consumption and value added are based on data supplied by Databank DigiMV of the Ministry of Health, Welfare and Sport, with digital annual reports of enterprise groups financed or partly financed through the Health care insurance act and/or the long-term care Act. Most of the sources provide detailed information on output, cost and profits. The latter can be transformed into intermediate consumption and value added.

The Databank DigiMV covers the following classes of the Standard Industrial Classification 2008 (SIC 2008):

86101 University hospitals

86102 General hospitals

86103 Specialised hospitals (not mental)

86104 Mental health and substance abuse hospitals

86222 Outpatient care for mental health

Tax declarations and Dutch Healthcare Authority (NZa)

The statistics are based on tax declarations of all companies of entrepreneurs in the health care sector, supplemented with accounting data of services delivered by general practitioners outside office hours, as supplied by the Dutch Healthcare Authority (NZa). The target population consists of entrepreneurs in the health care sector and other health care companies. The population of entrepreneurs is based on the registration of health care professionals in the so-called BIG-register by the Ministry of Health, Welfare and Sport. This register provides clarity and certainty regarding the care provider's qualifications and entitlement to practice. The BIG-register is combined with the registers of health care professionals by the Netherlands institute for health services research (NIVEL) and information regarding entrepreneurs from the Statistical Business Register of Statistics Netherlands. Other health care companies in the same branch according to the SIC of non-BIG registered entrepreneurs are added to the population.

This source covers the following classes of the Standard Industrial Classification 2008 (SIC 2008):

8621 General medical practices

86231 General dental practices

86232 Specialised dental practices

86911 Practices of midwives

86912 Practices of physiotherapists

86913 Practices of psychologists

86919 Other paramedical practitioners

Data supplied by financiers

SIC-classes that are not covered by the above-mentioned statistics are based on data supplied by financiers, health insurance funds and private insurers, supplemented by own-contributions and own-payments estimates. This concerns the following SIC-classes:

86221 Specialist medical practices and outpatients' clinics (no dentistry or psychiatry)

86222 Practices of psychiatrics

86923 Preventative health care (municipal health services)

86925 Ambulance transport and related emergency centres

Preventative (municipal) health care centres are mainly financed by the government and thus classified as non-market producers. The non-market production of these organisations was 766 million euros.

Structural business statistics (SBS)

Support for health care covers a variety of activities such as occupational health, blood banks, thrombosis services and medical laboratories. Data are collected annually via SBS-surveys for the following SIC-classes:

86922 Health and safety at work and reintegration activities

86924 Medical laboratories, intensive care for thrombotic patients and other analyses supporting medical treatment

(4) Extrapolation and models:

Production for umbrella organisations, cooperation and advisory bodies in the field of health care (86929) was estimated by using information on labour volume as described above. The estimated production is 1041 million euro.

(7) Data validation

Adjustments were made to correct implausible source data and to correct for wage subsidies which were included in the production in the source data.

(8) Conceptual

Adjustments were made for fisim, R&D and software as described in section 3.5.

(9) Exhaustiveness

Adjustments were made for income in kind (cf. section 3.7).

(10) Balancing

Adjustments were made based on the confrontation of supply and use of individual product groups.

3.24.2 Residential care and guidance (SIC 87) and Social work activities without accommodation (SIC 88)

Table 3.24.3 Process table of output, intermediate consumption and value added of Residential care and guidance (SIC 87) and Social work activities without accommodation (SIC 88), 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	0	0	34.962	801	0	35.763	-404	153	316	-289	35.539
Intermediate cons.	0	0	10.209	226	0	10.435	0	41	-187	-689	9.600
Value added	0	0	24.753	575	0	25.328	-404	112	503	400	25.939

(3) Combined Data:

Databank DigiMV

Estimates are based on data supplied by Databank DigiMV of the Ministry of Health, Welfare and Sport, with digital annual reports of enterprise groups financed or partly financed through the Health care insurance act and/or the long-term care Act (Wlz: Wet langdurige zorg), which provide detailed information on output, cost and profits, The latter can be transformed into intermediate consumption and value added.

The Databank DigiMV covers the following classes of the Standard Industrial Classification 2008 (SIC 2008):

8710 Nursing care

8720 Residential care for disabled persons and

87301 Day care for disabled persons

87302 Residential care for the elderly

87901 Residential care for children

87902 Residential care for other persons (only homeless)

88101 Home care

88991 Social work for children.

Structural business statistics (SBS)

Data are collected annually via SBS-surveys for enterprises for the following SIC-classes:

88102 Welfare for elderly

88911 Day nurseries for pupils

88912 Kindergartens (no schools)

88992 Social work for adults

88993 Community and neighbourhood activities

Statistics on centres for asylum seekers based on the annual account of the 'COA (Centraal Orgaan Asielzoekers) are added to the statistics for SIC 87902. COA, social assistance to children and other persons and some social work activities organisations are mainly financed by the government and thus classified as non-market producers. The non-market production of these organisations was 1,757 million euros in 2015.

(4) Extrapolation and models

Production for SIC 88999, Other social advice, community centres, and cooperative bodies in the field of welfare, was estimated by using information on labour volume as described above in paragraph 3.24. The estimated production is 801 million euros.

(7) Data validation

Adjustments were made to correct implausible source data and to correct for wage subsidies which were included in the production in the source data.

(8) Conceptual

Adjustments were made for fisim, R&D and software as described in section 3.5.

(9) Exhaustiveness

A supplementary estimate was made for concealed childcare as described in section 7.2.3. Adjustments were made for income in kind (cf. section 3.7).

(10) Balancing

Adjustments were made based on the confrontation of supply and use of individual product groups.

3.25 Arts, entertainment and recreation (NACE Rev. 2 Section R)

Table 3.25.1 Process table of output, intermediate consumption and value added of SIC R Arts, entertainment and recreation, 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	0	0	13971	0	0	13971	0	475	278	-5	14719
Intermediate cons.	0	0	8048	0	0	8048	29	25	-160	-337	7605
Value added	0	0	5923	0	0	5923	-29	450	438	332	7114

This NACE-class (SIC R) is not covered by SBS type statistics. To estimate output, intermediate consumption and value added, many sources of information were used. Next to functional (product or activity based) statistics that give information about revenue and costs, annual reports, industry reports and labour accounts are used for estimating. Together these sources determine the level of output, intermediate consumption and value added. Because of the complexity, heterogeneity and data availability (many different sources), estimates for this NACE class have been categorised under 'combined data' in the process table.

(3) Combined data

There is no complete data source available for output, intermediate consumption and value added for these activities. Various sources were used in order to make estimates (business register, labour accounts, information of branch associations). Output is estimated by multiplying the compensation of employees with the ratio between output and compensation of employees based on turnover data and data of Labour accounts of the enterprises for which this data is available.. Estimates of input output structures are made using all kinds of data sources.

(7) Data validation

These are adjustments made to the initial estimate of VAT paid by enterprises in this NACE-class (the latter is included in combined data column).

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D, insurance services. Next to that an adjustment has been made for originals to the value of € 375 million (see section 3.25.1 'further information').

(9) Exhaustiveness

Adjustments are made for concealed production (music bands, sports). Furthermore, as described in section 3.7, adjustments were made for cost fraud and income in kind.

(10) Balancing

Balancing did lead to substantial adjustments in this industry. Many small adjustments were made based on the confrontation of supply and use of individual product groups. Differences in sources on commodity level (supply versus demand) have led to adjustments in this industry.

3.25.1 Creative, arts and entertainment activities (SIC 90)

Table 3.25.2 Process table of output, intermediate consumption and value added of SIC 90 Creative, arts and entertainment activities, 2015 (million euros)

SIC 90	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(12)
Output	0	0	4.039	0	0	4.039	0	407	101	-2	4.545
Intermediate cons.	0	0	2.459	0	0	2.459	22	14	-138	-74	2.283
Value added	0	0	1.580	0	0	1.580	-22	393	239	72	2.262

(3) Combined data

There is no complete data source available for output, intermediate consumption and value added for these activities. Data is compiled using various sources (labour accounts, reports from branch associations, business register, government data, annual reports). See for more information the section 'further information' below.

(7) Data validation

These are adjustments made to the initial estimate of VAT paid by enterprises in this NACE-class (the latter is included in combined data column).

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D and insurance services. Next to that an adjustment has been made for originals to the value of € 375 million (see section 'further information' below).

(9) Exhaustiveness

An estimate is made for those music bands and disc jockeys playing at parties and weddings. This estimate is based on the total number of weddings and anniversaries (source: Statistics Netherlands). However, because of a lack of detailed data the following assumptions are made: on 2/3 of all parties and weddings a music band or disc jockey is playing for an average fee of a 1,000 euros. A part of this has been attributed to the hidden economy (see also section 7.2.3 on exhaustiveness).

Furthermore, adjustments were made for cost fraud and income in kind (cf. section 3.7).

(10) Balancing

Balancing did not lead to substantial adjustments in this industry. Adjustments were made based on the confrontation of supply and use of individual product groups.

Further information

Creative, arts and entertainment services SIC 90

Output estimates for this branch are based on VAT data and data from the Labour Accounts (compensation of employees). Both data sources are linked to the business register (ABR). Major missing enterprises are added (based on their annual reports).

Originals

Originals are included in the output of this branch. Required information cannot be obtained from data sources. Therefore, the output of originals is estimated separately and based on annual reports from collective management organizations like "BumaStemra" and "het Filmfonds".

The output of originals is derived from the (expected) flow of royalties. The following products are being distinguished:

- Books: the royalties received by writers on book sales. Based on information from the top 100 list of best sold books and information on average royalties received by writers, average royalties on Dutch books are assumed to be approximately 5 per cent of book revenues.
- Related rights (films and tv-programs excluded): a large part of the royalties are received by right management agencies (BumaStemra, Leenrecht, Sena, Lira etc.). This concerns royalty payments by third parties for the use of music, books, photos and the like.

3.25.2 Libraries, archives, museums and other cultural activities (SIC 91)

Table 3.25.3 Process table of output, intermediate consumption and value added of SIC 91 libraries, archives, museums and other cultural activities, 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	0	0	2.054	0	0	2.054	0	21	0	11	2.086
Intermediate cons.	0	0	1.179	0	0	1.179	-28	-1	-11	-54	1.085
Value added	0	0	875	0	0	875	28	22	11	65	1.001

(3) Combined data

There is no complete data source available for output, intermediate consumption and value added for these activities. Data is compiled using various sources (labour accounts, reports from branch associations, business register, government data, annual reports). See for more information the section 'further information' below.

(7) Data validation

These are adjustments made to the initial estimate of VAT paid by enterprises in this NACE-class (the latter is included in combined data column).

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D and insurance services.

(9) Exhaustiveness

Adjustments were made for cost fraud and income in kind (cf. section 3.7).

(10) Balancing

Balancing did not lead to substantial adjustments in this industry. Adjustments were made based on the confrontation of supply and use of individual product groups.

Further information

Library, archive, museum and other cultural services (SIC 91)

This branch is distinguished in the following subsectors:

- Library and archive services (91.01)
- Museum services (91.02)
- Operation services of historical sites and buildings and similar visitor attractions (91.03)
- Botanical and zoological garden services and nature reserve services (91.04)

Output estimates for these branches are in general based on tax data (VAT data), data from the Labour Accounts (compensation of employees) and custom made statistics for specific activities. Compensation of employees (Labour accounts) is used to gross up output to the population level (multiplying compensation of employees and a particular output wage ratio).

To determine production and the production structure (the ratio between Output, intermediate consumption and value added) for libraries, detailed data from the statistics "Public libraries" were used.

To determine production and the production structure of museum services, detailed data from the statistics "Museums" were used.

To determine production of art galleries and art exposition space, data from Labour Accounts (compensation of employees) are used. This information is used to estimate total output. To this end compensation of employees is assumed to be 25 per cent of total output (based on annual reports of several institutes). Intermediate consumption is considered 2/3 portion of output.

To determine output of services of historical sites and buildings and similar visitor attractions, tax data and data from the Labour Accounts are used. The production structure is based on the following assumptions: intermediate consumption 42 per cent and value added 58 per cent (56 per cent equals the part of compensation of employees included). These assumptions are based on a number of annual reports of representative institutes.

To determine production of botanical and zoological garden services, tax data and data from the labour accounts is used. This data is linked to the business register (ABR). Major missing enterprises are added, estimates being based on their annual reports. The production structure for these services is based on annual reports of a few representative enterprises.

3.25.3 Gambling and betting activities (SIC 92)

Table 3.25.4 Process table of output, intermediate consumption and value added of SIC 92 Gambling and betting activities, 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	0	0	1.680	0	0	1.680	0	4	170	0	1.854
Intermediate cons.	0	0	603	0	0	603	2	6	14	-18	607
Value added	0	0	1.077	0	0	1.077	-2	-2	156	18	1.247

(3) Combined data

There is no complete data source available for output, intermediate consumption and value added for these activities. Data is compiled using various sources (labour accounts, reports from branch associations, business register, government data, annual reports).

(7) Data validation

These are adjustments made to the initial estimate of VAT paid by enterprises in this NACE-class (the latter is included in combined data column).

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D and insurance services.

(9) Exhaustiveness

An adjustment is made for illegal gambling (both online and offline). In the Netherlands all online gambling activities are illegal. Illegal gambling represents a production value of 170 million euro and a value added of 151 million euro. For more information about the illegal economy see section 3.7 and 7.2.3.

Furthermore, adjustments were made for cost fraud and income in kind (cf. section 3.7).

(10) Balancing

Balancing did not lead to substantial adjustments in this industry. Adjustments were made based on the confrontation of supply and use of individual product groups.

3.25.4 Sports activities and amusement and recreation activities (SIC 93)

Table 3.25.5 Process table of output, intermediate consumption and value added of 93 Sports activities and amusement and recreation activities, 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	0	0	6.198	0	0	6.198	0	42	7	-13	6.234
Intermediate cons.	0	0	3.807	0	0	3.807	33	6	-25	-191	3.630
Value added	0	0	2.391	0	0	2.391	-33	36	32	178	2.604

(3) Combined data

There are no SBS-data available for this NACE class (SIC 93). To determine output, intermediate consumption and value added, many data sources were used. Next to some functional (product or activity based) statistics (which are available at Statistics Netherlands) that give information about revenue and costs, data from annual reports, industry reports and labour accounts are used for estimation. All these sources together (combined data) determine the level of output, intermediate consumption and value added. Because of the complexity, heterogeneity and data availability (many different sources), economic data for this NACE class has been categorised under 'combined data' in the process table.

See for more information the section *further information* below.

(7) Data validation

These are adjustments made to the initial estimate of VAT paid by enterprises in this NACE-class (the latter is included in combined data column).

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D and insurance services.

(9) Exhaustiveness

As described in section 3.7, adjustments were made for cost fraud and income in kind. A small estimate is made for concealed production in this area.

(10) Balancing

Balancing did not lead to substantial adjustments in this industry. Many small adjustments were made based on the confrontation of supply and use of individual product groups.

Further information

This branch distinguishes the following subbranches:

- Operation of sports facilities (93.11)
- Activities of sport clubs (93.12)
- Fitness facilities (93.13)
- Other sports activities (93.19)
- Activities of amusement parks and theme parks (93.21)
- Other amusement and recreation activities (93.29)

Operation of sports facilities (93.11)

Information on output and cost structure (the ratio between output, intermediate consumption and value added) of sports facilities is based on the statistics "Sportaccommodaties" from which detailed economic data are available. Wage data are checked with corresponding data from the Labour Accounts.

Activities of sport clubs (93.12)

Output and cost structure of activities of sport clubs is based on the statistic “Sportclubs” from which detailed information is available. Wage data are checked with corresponding data from the Labour Accounts.

Output and cost structure of professional soccer clubs is separately estimated, based on data from their annual reports. Transfers fees are not included in production and intermediate consumption.

Fitness facilities (93.13)

Information on output and cost structure (the ratio between output, intermediate consumption and value added) of fitness facilities is based on the statistics “Fitness, personeel en exploitatie” from which detailed economic data are available. Wage data are checked with corresponding data from the Labour Accounts.

Other sports activities (93.19)

Information on output and production costs is obtained from the statistic “Watersport” (which excludes Marinas). This source provides detailed economic data. Wage data are checked with corresponding data from the Labour Accounts.

Information on output and production costs in relation to other sports activities is difficult to obtain, due to lack of data sources and the great heterogeneity of this section. As much as possible information from annual reports of sport associations (e.g. KNVB (the Dutch football association), NOCNSF (the Dutch Olympic committee),etc.) is used as well as reports from branch organizations (Sportvisserij Nederland, HISWA etc.). However, not for every subsection useful information is available. For some activities (among others professional sportsmen, fishing boat trips, organization of sporting events, etcetera) data from the labour accounts are used to estimate production. Output is determined by multiplying the compensation of employees with the ratio between output and compensation of employees from the production structure of a number of representative institutes and expert guesses.

Activities of amusement parks and theme parks (93.21)

Information on output and production costs related to amusement parks and theme parks is based on annual reports of the biggest enterprises in the Netherlands (e.g. De Efteling). To estimate total output, data from the labour accounts are used. Output is determined by multiplying the compensation of employees with the ratio between output and compensation of employees from the production structure of these biggest and representative enterprises.

Determining production in relation to fairs is also difficult because of lack of sources. Data from the Labour Accounts are used to calculate production. Information on the compensation of employees is used to estimate production. It is assumed that the production structure of amusement parks and theme parks is representative for fairs.

3.26 Other service activities (NACE Rev. 2 Section S)

Table 3.26.1 Process table of output, intermediate consumption and value added of SIC S Other services activities, 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	5.312	0	6.282	234	0	11.828	-243	97	959	-32	12.609
Intermediate cons.	2.602	0	2.823	0	0	5.425	52	17	146	-91	5.549
Value added	2.710	0	3.459	234	0	6.403	-295	80	813	59	7.060

(1) Surveys & censuses

Output, intermediate consumption and value added of SIC 95 and SIC 96 are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(3) Combined data

For the activities of membership organisations (SIC 94) there is no complete data source available for output, intermediate consumption and value added . Data are compiled using various sources (labour accounts, branch associations, business register, annual reports). Output is determined by multiplying the compensation of employees with the ratio between output and compensation of employees from the production structure based on turnover data and data from Labour accounts. Data on input and output structure are compiled using all kinds of data sources.

(3) Extrapolation and models

See the relevant section below on SIC 94 (3.26.1)

(7) Data validation

See the relevant section below on SIC 94 (3.26.1).

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D and insurance services.

(9) Exhaustiveness

Adjustments were made for illegal production (prostitution) and concealed production (hair dressing and reparation). Furthermore adjustments were made for cost fraud and income in kind (cf. section 3.7).

(10) Balancing

Balancing did not lead to substantial adjustments in this industry. Many small adjustments were made based on the confrontation of supply and use of individual product groups.

3.26.1 Activities of membership organisations (SIC 94)

Table 3.26.2 Process table of output, intermediate consumption and value added of SIC 94 Activities of membership organisations, 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	0	0	6.282	234	0	6.516	-243	51	0	-3	6.321
Intermediate cons.	0	0	2.823	0	0	2.823	53	65	-28	-62	2.851
Value added	0	0	3.459	234	0	3.693	-296	-14	28	59	3.470

(3) Combined data

There is no complete data source available for output, intermediate consumption and value added for these activities. Data is compiled using various sources (labour accounts, branch associations, business register, annual reports). Output is determined by multiplying the compensation of employees with the ratio between output and compensation of employees from the production structure based on turnover data and data from the Labour accounts. See for more information the section further information below.

(4) Extrapolation and models

An adjustment is made for consumption of fixed capital on own account R&D by government entities.

(7) Data validation

Output in this NACE-class is estimated from the sum of costs (compensation of employees, depreciation and intermediate consumption). As the initial estimate of depreciation (included in the column combined data) was adjusted downwards, output also had to be reduced by that same amount (243 million euro). Intermediate consumption is corrected upwards by 53 million euro as the initial estimate of VAT paid by enterprises in this NACE-class (which is included in the column combined data) is adjusted upwards.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D and insurance services.

(9) Exhaustiveness

Adjustments were made for cost fraud and income in kind (cf. section 3.7).

(10) Balancing

Balancing did not lead to substantial adjustments in this industry. Many small adjustments were made based on the confrontation of supply and use of individual product groups.

Further information

This branch is distinguished in the following subsectors:

- Activities of business, employers and professional membership organisations (94.1)
- Activities of trade unions (94.2)
- Activities of religious organisations (94.91)
- Activities of political organisations (94.92)
- Activities of other membership organisations n.e.c. (94.99)

Activities of business, employers and professional membership organisations (94.1)

To estimate production for activities of business, employers and professional membership organisations data on the input output structure of representative enterprises from annual accounts is combined with data on the compensation of employees from the Labour Accounts.

Activities of trade unions (94.2)

The output of trade unions is based on information from the Labour Accounts. The level of compensation of employees is used to estimate production. Output is determined by multiplying the compensation of employees with the ratio between output and compensation of employees from the production structure based on annual reports of the big trade unions FNV and CNV.

Activities of religious organisations (94.91)

Production of religious organisations is based on information from labour accounts. Output is determined by multiplying the compensation of employees with the ratio between output and compensation of employees from the production structure based on the annual report from a couple of dioceses in the Netherlands.

Activities of political organisations (94.92)

Production of political organisations is also based on information from the Labour accounts. Output is determined by multiplying the compensation of employees with the ratio between output and compensation of employees from the production structure based on annual reports of political parties like CDA, VVD, PvdA, CU, D66 and SP.

Activities of other membership organisations n.e.c. (94.99)

The other membership organisations n.e.c. is, because of its heterogeneity, distinguished in the following subsectors:

- Social clubs, hobby clubs and groups of friends
- Support funds and other non-profit organizations
- Overarching agencies and collaborative -and advisory and other advocacy

To estimate production of social clubs, hobby clubs and groups of friends is not straight forward because of the lack of data sources. These activities represent a small production level and are not volatile or cyclical. Information on compensation of employees (labour accounts) has been multiplied with a typical production structure.

Production and the production structure of support funds and other non-profit organizations can be determined with data from “Centraal Bureau Fondsenwerving”, which gives detailed economic data. In addition annual reports are used to verify the results.

To determine the production structure for overarching agencies and collaborative -and advisory and other advocacy, data from a couple of big enterprises is used (e.g. ANWB, CBR, Consumentenbond). Production is determined with data from labour accounts. The level of wages and social premiums is used to estimate production using representative production structures.

3.26.2 Repair of computers and personal and household goods (SIC 95)

Table 3.26.3 Process table of output, intermediate consumption and value added of 95 Repair of computers and personal and household goods, 2015, (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	948	0	0	0	0	948	0	13	60	-4	1.017
Intermediate cons.	574	0	0	0	0	574	0	-6	-6	-22	540
Value added	374	0	0	0	0	374	0	19	66	18	477

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D and insurance services.

(9) Exhaustiveness

Adjustments were made for cost fraud and income in kind (cf. section 3.7). An additional estimate is made for concealed production (reparation of computers). This estimate represents a production value of 61 million euro and a value added of 61 million euro. For more information about the black economy see section 3.7 and 7.2.3.

(10) Balancing

Balancing did not lead to substantial adjustments in this industry. Small adjustments were made based on the confrontation of supply and use of individual product groups.

3.26.3 Other personal service activities (SIC 96)

Table 3.26.4 Process table of output, intermediate consumption and value added of SIC 96 Other personal service activities, 2015, (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	4.364	0	0	0	0	4.364	0	33	899	-25	5.271
Intermediate cons.	2.028	0	0	0	0	2.028	-1	-42	180	-7	2.158
Value added	2.336	0	0	0	0	2.336	1	75	719	-18	3.113

(1) Surveys & censuses

Output, intermediate consumption and value added are based on the structural business statistics (SBS). For more general information on the SBS and for specific methods per size class, see section 3.2.2.

(7) Data validation

In this particular case, the adjustments are due to rounding in the underlying subgroups.

(8) Conceptual

As described in section 3.5, adjustments were made for fisim, software, R&D and insurance services.

(9) Exhaustiveness

Additional estimates are made for illegal activities (prostitution) and for the hidden economy (hairdressers). See section 7.2.3 for more details. This estimate represents a production value of 471 million euro and a value added of 260 million euro. For more information about the illegal economy see 3.7 and 7.2.3. .Besides, adjustments were made for cost fraud and income in kind (cf. section 3.7).

(10) Balancing

Balancing did not lead to substantial adjustments in this industry. Many small adjustments were made based on the confrontation of supply and use of individual product groups.

3.27 Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use (NACE Rev. 2 section T)

Table 3.27.1 Process table of output, intermediate consumption and value added of SIC T, activities of households as employers; undifferentiated goods- and services- producing activities of households for own use, 2015 (million euros)

	Basis for NA Figures						Adjustments				Final estimate
	Surveys & Censuses	Administrative Records	Combined Data	Extrapolation and Models	Other	Total (sources)	Data validation	Conceptual	Exhaustiveness	Balancing	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Output	0	0	532	0	0	532	0	0	0	0	532
Intermediate cons.	0	0	0	0	0	0	0	0	0	0	0
Value added	0	0	532	0	0	532	0	0	0	0	532

There are no SBS-type data available for this NACE class (SIC T).

(3) Combined data

In the Netherlands disabled people can get a personal budget from the government (PGB). This personal budget is provided for buying care services. Besides the PGB funds there is an estimate for staff employed within households. Examples are the gardener and the butler. However, the size of these services is considered as very small (4 million euro). These estimates are derived from the Labour Accounts.

No specific estimates are made for income in kind, in particular food and accommodation, of remuneration paid to employed staff. Since total income is so small, income in kind will not exceed half a million euros and thus will be zero in the national accounts.

3.28 Activities of extraterritorial organisations and bodies (NACE Rev. 2 section U)

This section is relevant for chapter 8. No description is required here.

3.29 Taxes on products, including VAT

3.29.1 Taxes on products

Table 3.29.1 provides a summary of the extent and composition of Dutch taxes on products in 2015. All taxes on products are state taxes determined on the basis of a statement provided by the tax authorities.

Value Added Tax is by far the most important tax on products, accounting for 64 per cent of the total. Based on a dataset from the tax authorities the estimates of net VAT receipts cover all the receipts related to 2015 (accrual basis) as for over 98 percent of all VAT-receipts and VAT-refunds it is registered whether they concern the current or a previous year. The calculation is as follows:

$$VAT_t = Receipts_{t|t} + Receipts_{t+1|t} - Refunds_{t|t} - Refunds_{t+1|t} + Other_{t,}$$

VAT_t : VAT due in year t

$Receipts_{t|t}$: Tax authorities' VAT receipts in year t concerning year t

$Receipts_{t+1|t}$: Tax authorities' VAT receipts in year t+1 concerning year t

$Refunds_{t|t}$: Tax authorities' VAT refunds in year t concerning year t

$Refunds_{t+1|t}$: Tax authorities' VAT refunds in year t+1 concerning year t

$Other_{t'}$: Tax authorities' not specified VAT receipts from February of year t to and including January of year t+1

Two estimates are available for the VAT, the theoretical VAT that is estimated by applying the VAT-rates to all concerning transactions in the SUT and the (accrual) VAT that is actually received by the government. The alignment of the theoretical VAT to the VAT actually received by the government is described in chapter 7, Overview of the allowances for exhaustiveness.

All the other taxes on products are not on a cash basis, but on a one month delayed cash base which is thought to be the best approximation of accrual data.

Table 3.29.1 Taxes on products (production and imports), 2015

	million euros	%
Value added tax	44.746	64
Import duties to the European Union	2.307	3
Levy on mineral oil product stocks	106	0
European Union levies on food products	356	1
Excise duties	**11.207**	**16**
Motor spirits	4.109	6
Other mineral oils	3.757	5
Tobacco	2.222	3
Alcohol	314	0
Other excise duties	805	1
Tax on non-alcholic beverages, etc.	207	0
Energy levies	4.484	6
Ground water taxes	261	0
Fuel taxes	195	0
Waste taxes	84	0
Taxes on passenger cars and motorcycles (BPM)	1.462	2
Tax on lotteries and gambling	334	0
Real estate transfer tax	1.772	3
Insurance premium tax	2.375	3
Total taxes on products	**69.896**	**100**

Taxes on products are determined with reference to ESA 2010. Taxes on products are levied on output (production), whereas other taxes on production consist of all taxes that enterprises incur as a result of engaging in production, independent of the quantity or value of the goods and services produced or sold. There are some borderline cases here. The eurovignette (paid for trucks using Dutch motorways) could be considered a tax on products, but is in line with EU-regulations recorded as a sale of service. Rationale for this registration is that the users of the trucks have sufficient choice both in terms of selecting specific roads and of choosing a determined length of time.

Waste tax is treated as sales of services whereas sewage charges are seen as other taxes on production. Payments for the so-called waste taxes are related to the amounts of waste collected and processed by local government units whereas the sewage charges are compulsory and not directly related to a certain amount of treated wastewater.

3.30 Subsidies on products

Table 3.30.1 summarises the extent and composition of subsidies on products in the Netherlands. With reference to GDP at market prices, these comprise 0.1 per cent in 2015. The table also summarises the sources and estimation methods used. The table shows that sustainable electricity subsidies are the principal subsidies on products, accounting for 96 per cent of the total. In addition to the electricity subsidies a small estimate is made for subsidies related to insulation and rent (4 per cent). These data are provided by the Dutch central government and can be booked on an accrual basis.

Table 3.30.1 Subsidies on products, 2015

	million euros	%
Subsidies on sustainable electricity	692	96
Other (various operating subsidies)	31	4
Total subsidies on products	**723**	**100**

The definition of subsidies on products is determined with reference to ESA 2010 (see, in particular, sections 4.33 to 4.35 inclusive). The main difference compared with other subsidies on production is that subsidies on products are granted on the basis of generated output, whereas other subsidies depend on inputs/costs incurred (for example, wage subsidies, subsidies for swimming pools, compensations for harvest rain damage. Most subsidies are production based rather than on products.

Subsidies on products are only provided to market producers. They are distinguished from income transfers, because subsidies on products have the objective to influence prices of production whereas current transfers are provided to market or non-market producers with the objective to serve other purposes unrelated to the production.

Subsidies on products are provided to market producers with the objective of influencing the prices of products. Subsidies on production are provided to influence the levels of production or to influence the remuneration of the factors of production. However, the latter subsidies on production can be provided also to non-market producers if these subsidies depend on general

regulations applicable to market and non-market producers, e.g. wage subsidies for certain groups of employees.

Part of the other subsidies on products concern scrap schemes which can be received when a person car or delivery van with a year of construction before 1999 (there is a differentiation in the level of the premium linked to type of fuel and age of the car or van) is scrapped and a new car is bought (obligatory). The amount regarding to scrap schemes in 2010 for example was significant but in 2015 negligible.

CHAPTER 4 THE INCOME APPROACH

4.1 GDP according to the income approach

Table 4.1 describes the breakdown of GDP by NACE, rev. 2 groups in 2015 into compensation of employees, taxes on production and imports, subsidies on production and imports and the gross operation surplus.

Table 4.1 GDP according the income approach by NACE sections, 2015

	Compensation of employees	Taxes on products	Other taxes on production and imports	Subsidies on products	Other subsidies on production	Gross operating surplus	Value added (gross)/GDP
					(-)	(-)	
	million euros						
A Agriculture, forestry and fishing	3038	-	351	-	1077	9586	11898
B Mining and quarrying	1240	-	11	-	5	11323	12569
C Manufacturing	38816	-	470	-	704	35951	74533
D Energy supply	1981	-	126	-	10	5720	7817
E Water supply and waste management	1812	-	49	-	99	2410	4172
F Construction	16055	-	139	-	79	10279	26394
G Wholesale and retail trade	42307	-	501	-	222	40990	83576
H Transportation and storage	17190	-	460	-	1232	14247	30665
I Accommodation and food serving	6304	-	290	-	34	5268	11828
J Information and communication	15455	-	77	-	288	14225	29469
K Financial institutions	17835	-	1068	-	34	33625	52494
L Renting, buying, selling real estate	3462	-	3831	-	21	32232	39504
M Other specialised business services	33366	-	202	-	1462	18831	50937
N Renting and other business support	24649	-	538	-	213	13663	38637
O Public administration and services	29556	-	625	-	15	13875	44041
P Education	23344	-	316	-	19	7367	31008
Q Health and social work activities	45190	-	366	-	1954	12985	56587
R Culture, sports and recreation	3613	-	69	-	378	3810	7114
S Other service activities	4522	-	45	-	71	2564	7060
T Activities of households	532	-	-	-	-	-	532
U Extraterritorial organisations	-	-	-	-	-	-	-
Not allocated to industry	-	69896	-	723	-	-	69173
Total	330267	69896	9534	723	7917	288951	690008

In the Netherlands the supply and use tables are leading in estimating GDP using primarily the production and expenditure method. As gross operating surplus is calculated as a balancing item, strictly speaking the income method is not used in GDP-compilation. Nevertheless independent estimates for compensation of employees and mixed income are made, based on administrative and statistical data. Next to that plausibility checks are carried out on the estimates of (net) operating surplus. By applying the so-called ‘dual classification’ on the components of value added of the supply and use table, GDP is redistributed from the branches of industry to the sectors of the institutional sector accounts. Table 4.2 gives the breakdown of GDP by institutional sector.

Table 4.2 GDP according the income approach by institutional sector, 2015

	Compensation of employees	Taxes on products	Other taxes on production and imports	Subsidies on products	Other subsidies on production	Gross operating surplus	Value added (gross)/GDP
				(-)	(-)		
The non-financial corporations	237864	-	5428	-	6160	160202	397334
Financial corporations	17667	-	1065	-	34	33194	51892
General government	58650	-	924	-	37	22156	81693
Households	13672	-	2087	-	1686	73189	87262
Non-profit institutions serv. households	2414	-	30	-	-	210	2654
Not allocated to sector	-	69896	-	723	-	-	69173
Total	330267	69896	9534	723	7917	288951	690008

Several data sources are used to rearrange the transactions from industries of the supply and use tables into the sectors in the sector accounts. Important sources are business statistics, statistics on corporate finance and the Statistical Business Register (SBR). For the sector households (S14) the register of self-employed (the "Satelliet Zelfstandige Ondernemers", SZO) is an important data source. It has to be emphasised that large parts of general government and the financial institutions are primarily estimated within the framework of the institutional sector accounts. In the latest benchmark revision the compensation of employees (D.1) of General Government units are aligned with data from the labour accounts. Estimates for the supply and use table are subsequently derived from the data in the institutional sector accounts. Therefore the dual classification estimates concern mainly non-financial corporations, households and non-profit institutions serving households.

4.2 The reference framework

The estimation of gross domestic product (GDP) from the income perspective involves its estimation as the sum of the various components of value added, namely compensation of employees, the balance of other taxes and subsidies on production, consumption of fixed capital and net operating surplus/ mixed income.

From the income perspective, GDP can be estimated in different ways - for example based on:

- components of value added for the total economy;
- components of value added for individual industries;
- components of value added for institutional sectors;
- gross operating surplus/mixed income as residual items.
- a combination of the above

As operating surplus is treated as a residual item in the supply and use system strictly speaking in the Netherlands the income approach is not applied in the sense that for all components of value added estimates are made based on source data fully independent of the production approach. Nevertheless for compensation of employees, the balance of other taxes and subsidies on production, mixed income and consumption of fixed capital independent estimates are made. Next to that plausibility checks are carried out for (net) operating surplus (see section 6.2.1.4 for more details).

Below an overview is given of the source data for estimating the components of value added both on sector and industry level:

- compensation of employees is estimated for the whole economy and by industry in the labour accounts based on administrative data for wages, government data and data from pension funds for (the totals of) employers' social premiums;
- for financial corporations compensation of employees is initially estimated for the concerning sectors and subsequently balanced with the labour accounts data. For the other sectors (government, non-financial enterprises, households and NPISH) estimates are based on the labour accounts data for individual industries which are redistributed to institutional sectors;
- taxes on production and subsidies are determined for the whole economy based on administrative data of the government and are broken down to industry and sector based on among others business statistics;
- gross operating surplus is estimated as a residual item and redistributed from industries of the supply and use table to institutional sectors (mainly applied for non-financial enterprises, households and NPISH);
- gross operating surplus of government and NPISH (non-market producers) equals consumption of fixed capital, which is estimated using the Perpetual Inventory Method;
- estimates for mixed income are based data from the register of self-employed (the "Satelliet Zelfstandige Ondernemers", SZO).

4.3 Borderline cases

Compensation of employees includes wages and salaries in kind resulting both from (additional) output and intermediate consumption. Wages and salaries in kind exclude expenditure that benefits the employer because it is necessary for the production process, such as business travel expenses. However, the meals enjoyed during the business travel are included as the corresponding meal at home is saved by the employee. Another example of exclusion is the expenditure for specific clothing used mainly at work; these are not treated as wages and salaries in kind, but recorded are part of the intermediate consumption in the production process concerned.

The scope of gross fixed capital formation (GFCF) in ESA2010 does not necessarily coincide with bookkeeping of enterprises. Software and R&D are well known examples. In the translation of data from business statistics to national accounts definitions, adjustments have to be made in order to assure that expenditure on intellectual property products are recorded as GFCF instead of intermediate consumption. As a residual item in the supply and use tables, the impact of rerouting expenses from current to capital, gross operating surplus will be adjusted upwardly. The opposite holds for the inclusion of FISIM in intermediate consumption.

For the recording of taxes and subsidies on production and imports, reference is made to sections 4.9 and 4.10.

4.4 Valuation

The sum of compensation of employees, the balance of other taxes and subsidies on production and gross operating surplus / mixed income results in gross value added at basic prices. For these components no specific valuation aspects are at stake. Wages and salaries in kind are valued at basic prices when the provided products are produced by the employer. If the products are purchased by the employer, they are valued at purchasers' prices.

Ad hoc payments such as bonus payments, are recorded in the year in which the bonus is due to be paid. The same holds for more regular payments like the holiday pay and 'the 13th month' (or sometimes even the 14th month). This way of recording does not follow the accrual principle exactly, but differences tend to be very small as these payments change only gradually over time.

4.5 Transition from private accounting and administrative concepts to ESA 2010 national accounts concepts

Definitions and concepts used in the national accounts do not always correspond with private accounting and administrative practice. There are many examples of differences, but two are of particular importance for the income approach.

The national accounts concept of wages, or more accurately: compensation of employees, differs significantly from the corresponding concept in private accounting. Company accounts do not include the costs of company-car use, interest discounts, meals, etc. in wages, whereas the national accounts identify these as payments in kind. Next to that, payments during sickness are included in wages, while in the national accounts they must be recorded as (imputed) employers' social contributions. The estimation process of compensation of employees includes adjustments to overcome these differences in 'definitions' (see section 4.9 for more details).

The treatment of taxes and subsidies in the national accounts may differ from private accounting practice, for example, because the moment of actual payment needs not to coincide with the moment an entitlement is acquired. As the national accounts take the accrual government data on taxes and subsidies as a fixed starting point, the allocation to industries may not always be fully adequate. The total is however in line with the principle of the national accounts.

The concept of consumption of fixed capital is quite different from business accounting practice. Enterprises generally determine depreciation based on rules approved by the tax authorities (examples are replacement value, historic cost price). National accounts uses the PIM-model (see section 4.13 for more details) in which assets are always valued at actual market prices.

According to ESA 2010, all expenditure items classified as GFCF, must be subtracted from current costs as reported in business surveys and company reports. As a consequence, gross value added will increase. Important items in this respect are "research and development", "software and entertainment, literary and artistic originals". The processing methods of the source statistics include the adequate adjustments for each of these items (see for more details chapters 3 and 5).

The compilation of the output of insurance service charge is described in section 3.18. These service charges are allocated to industries and consumption of households, applying a proportional distribution based on premiums paid.

Production and intermediate consumption of fisim are estimated based, among others, on data from balance sheets by institutional sector. The allocation to industries is based on production totals. FISIM is included as a separate service item in the supply and use system. As gross operating surplus is calculated as a residual item, the impact of fisim on value added is automatically accounted for.

The design of the questionnaires for investment statistics and business statistics addresses the distinction between financial lease and operational lease. Assets under financial lease have to

be reported as gross fixed capital formation in the accounts of the lessee. The fee paid for assets under an operational lease are part of the lessee's current costs and intermediate consumption.

In the Dutch national accounts decommissioning of large capital assets is recorded as GFCF at the moment the demolition takes place, at the end of the service life of the concerning asset. Demolition as an activity is mainly produced by the construction industry.

4.6 The roles of direct and indirect estimation methods and of benchmarks and extrapolations

Besides gross operating surplus all income components of GDP are (largely) based on direct estimation methods. A great variety of statistical sources is available, many of them also used in the production based GDP estimation. Wages and employer's social contributions are largely estimated on the basis of statistical sources, with indirect estimation methods only being required for wages and salaries in kind and a (small) part of pension premiums. Estimates of employer's social contributions rely on the actual receipts of social security organisations, providing exhaustive information. Subsidy and tax estimates are based on data from government registers.

As gross operating surplus is a residual item in the supply and use system strictly speaking the income approach is not applied in the Netherlands in the sense that for all components of value added estimates are made based on independent sources. Nevertheless for mixed income independent estimates are made and plausibility checks on net operating surplus are carried out using data from business statistics (see section 6.2.1.4 for more details) .

Level estimates for the national accounts data were determined in the context of the 2015 benchmark revision. In estimates for subsequent years, the greatest possible use is made of business surveys and other annual data sources maintaining level estimates in accordance with these data sources. Since (statistical) level data are not available for each variable, in subsequent years these variables will be estimated by using trend indicators, for example (volume of) total output.

4.7 The main approaches taken with respect to exhaustiveness

Although in the Netherlands no independent estimate of GPD applying the income approach is made, additional estimates for exhaustiveness are added to observed data on compensation of employees and operating surplus/mixed income. For compensation of employees additional estimates for wages in kind, tips and concealed payments (5229 million euros) are made. This amount consists of 2504 for lease cars, estimates for tips, share options, free travel and interest discounts (726 million euros), wages in kind (excl. company car, 1748 million euros) and concealed payments to regular staff (251 million euros). The impact of exhaustiveness estimates on operating surplus / mixed income amounts to 7204. The main part of this amount is linked to illegal activities (N2, 4761 million euros), cleaning services (N1, 1337 million euros).

4.8 Compensation of employees

4.8.1 Summary and process table

Compensation of employees is compiled as part of the Dutch system of labour accounts. These labour accounts are fully consistent with the Dutch national accounts. The main data-sources of the labour accounts with regard to compensation of employees are the monthly micro-datasets on job level derived from the Employees' Register of the Employee Insurance Agency. These datasets are available via the Social Statistical Database (SSD). The main base for national accounts figures on compensation of employees are therefore administrative records (column (2) of the process table). For the breakdown of compensation of employees into branches of industry according to the columns of the supply and use table, the administrative data are linked to the units in the statistical business register (SBR). The total compensation of employees is shown in the process table.

Table 4.3 Process table for compensation of employees, 2015

	Column	Compensation of employees
Basis for national accounts figures		
Surveys & Censuses	(1)	0
Administrative records	(2)	318193
Combined data	(3)	0
Extrapolation and models	(4)	9426
Other	(5)	0
Total (sources)	(6)	327619
Adjustments		
Data validation	(7)	0
Conceptual	(8)	0
Exhaustiveness	(9)	2725
Balancing	(10)	-77
Final estimate	(11)	330267

The allocation of the various parts of the estimates of compensation of employees in the process table is derived from the table 4.4. This table shows the composition of the estimates of 'compensation of employees' for 2015.

Row (4) of table 4.3 "Extrapolation and models", is determined by the items (a + b + c + d + e) minus the items (j + k + l) in table 4.4, i.e. 19,596 million euros minus 10,170 million euros. The estimate for exhaustiveness in column (9) equals the items (f + g + h) of table 4.4. Row (10), balancing, equals item i in table 4.4. All other items in table 4.4 are considered as administrative records (row (2)) in the process table.

4.8.2 Wages and Salaries

The primary data-source for the compilation of the labour accounts with regard to compensation of employees are the monthly micro-datasets on job level based on the Employees' Register of the Employee Insurance Agency. From 2006 onwards companies are legally obliged to report every individual payment to every employee to the tax authorities on a monthly basis. These datasets are available via the Social Statistical Database (SSD). This register contains information for all existing jobs of all employees working for a company in the Netherlands during 2015. For nearly all these jobs information is available on the economic activity, hours worked, total amount of wages and number of days for which wages were paid. The data in the administrative records are however not in full conformity with the definitions of the ESA2010 and need some further processing. An example is payment during sick leave which is recorded as part of wages in the administrative records but must be recorded as (imputed) employers' social contribution in the national accounts.

Next to these administrative records additional estimates have to be made for example for wages in kind and the hidden economy.

Table 4.4 gives an overview of the main components of the estimates of wages and employers' social contributions.

Starting point for the estimates of compensation of employees are the gross wages recorded for social security which can be directly derived from the administrative records.

Item a. concerning employee premiums for pension and early retirement programs, are separately available in the administrative records.

Item b Savings for paid leave ("levensloop") is initially derived from the administrative records but adjusted as a consequence of the balancing process with the supply and use tables, institutional sector accounts and collective tax declarations on wages.

Item c. Commuting costs are directly derived from the administrative records.

The private use of company cars (item d) is taxed in the Netherlands and is therefore part of the tax declaration. Section 7.2.3.5 provides further information on the estimate of item d.

Table 4.4 The composition of the compensation of employees, 2015

	million euro	
Gross wages recorded for social security	248.616	
Total supplementary estimates (+)		
Of which	22.244	
a. Employee premiums for pension and early retirement programs		12.669
b. Savings for paid leave (levensloop)		-425
c. Commuting costs		3.748
d. Company car		2.504
e. Untaxed benefits		1.100
f. Tips, share options, free public transportation, interest discounts		726
g. Wages in kind		1.748
h. Concealed payments to regular staff		251
i. Balancing item		-77
Total supplementary estimates (-)		
Of which	10.170	
j. Pseudo public sector regulations (-)		1.130
k. Payment during sick leave (-)		9.040
l. Payment during leave due to bad weather (-)		0
Wages and salaries	260.690	
Employers' social contributions		
Of which	69.577	
m. Employers' contributions to pension schemes		23.209
n. Care Insurance Act (ZVW)		13.968
o. Act on Work and Income based on Work Capacity (AOF, Whk)		12.081
p. Disablement Insurance Fund (AOK)		0
q. Unemployment Insurance Act (WW, WKO)		7.876
r. Executive Fund of the Government (UFO)		689
s. Employers' other private social insurance contributions		0
t. Imputed social contributions		11.754
Compensation of employees	330.267	

For item e. untaxed benefits (*vrije ruimte*) there are no source data available. These benefits are untaxed when they do not exceed the limit 1.2 percent of the gross wages recorded for social security. When employers cross this limit they will be imposed upon a heavy tax. For the estimate of the *'vrije ruimte'* a study is used to what extend employers are using their opportunity to give their employees untaxed benefits. According to the study 90 percent of the employers use this opportunity. Part of the *'vrije ruimte'* is already covered by the wages in kind (item h). Wages in kind is derived from administrative data and concerns gift of employers to their employees like Christmas presents etc. The conclusion is that 1.1. billion euro (not related to wages in kind) is missing in our estimates.

Item f. Share options, free public transportation and interest discounts results from various sources and model estimates.

The amount of tips and share options is derived from income tax data (IPO, 30 million). Based on a questionnaire by the Dutch Central Bank (DNB) estimates on interest discounts for the staff of banks and insurance companies are made (290 million). Tips are common in the catering industry. These are estimated at 364 million euro (see section 7.2.3.3 and 7.7 for more details). The amount for free public transportation is estimated at 42 million euro. Free transport services concern employees of the railways, public transport (excluding taxis) and airliners. See section 7.2.3.5 for further information.

Item g. Wages in kind includes mainly meals and drinks offered by the employer in the office and during business trips. Section 7.2.3.5 provides further information on item g.

Item h. Concealed payment of regular staff concerns tips in pubs and restaurants (101 million euros) and payments by unofficial employment agencies (150 million euros). See section 7.2.3.1 and 7.2.3.2 for more details.

Excluded from wages and salaries are payments according to pseudo public sector regulations (item j), payments during sick leave (item k) and the payment during weather-related leave (l).

Payments according to pseudo public sector regulations refer to paid leave for mothers (four months) and fathers (two days) of newly born babies in 2015. Because the identity is known of all individuals who had a baby in 2015, the adjustment of the wages can be calculated precisely.

Item k. The payments during sick leave are calculated on the basis of data on sickness absence (a quarterly survey on sick leave).

Item l. Payment during leave due to bad weather only concerns construction. From the production survey on construction, quarterly estimates on the number of lost days are made. Both items are transferred from wages and salaries to the employers' social contributions.

4.8.3 Employers' social contributions

Employers' social contributions consist of employers' contributions to pension schemes, contribution for social security like health and unemployment and imputed contributions.

The estimates for employers' contributions to pension schemes are derived from source data collected by the Dutch Central Bank. The observed pension premiums of pension funds and collective life insurance is a fixed starting point. In the labour accounts an estimate is made for the employee's part of pension premiums using administrative data on wages mentioned before in combination with some modelling. In general the labour accounts estimates for the employee's part are leading, so that the employers' part is the remaining part to match the total premiums from the Central Bank data. Small adjustments are made for premiums paid by non-residents to resident pension funds and vice versa.

Finally an amount for pre-pension schemes is added which is estimated using annual reports of pre-pension funds. Within the framework of the labour accounts the employee's part is estimated based on administrative data. For pre-pension premiums it is assumed that cross border transactions do not exist.

For the Cure Insurance Act (ZVW), the Act on Work and Income based on Work Capacity (WIA, Whk), the Disablement Insurance Fund (AOK), the Unemployment Insurance Act (WW, WKO) and the Executive Fund of the Government (UFO, finances social benefits for civil servants) two sources of information are available for the national figures. On the one hand information from tax authorities on social premiums paid are available. On the other hand data

are available from the institutions actually executing the concerning acts. The two sources are confronted and checked on plausibility. In principle the tax data are leading.

Imputed social contributions consist mainly of payments during sick leave, pregnancy and birth, military pensions and government pre-pension schemes. The former are estimated using labour data (see above). The latter stems from administrative data of the government.

Estimates of employers' social premiums on the industry level are based on the monthly micro-datasets on job level based on the Employees' Register of the Employee These figures are compared to national data described above in order to compute the final figures.

4.9 Other taxes on production

The other taxes on production (D.29) amounted to 9 534 million euros in 2015, representing about 1.4 per cent of GDP at market prices. Taxes on land, buildings or other structures such as the property tax, polderboard levies and special levies on social housing corporations constituted the largest part of the other taxes on production in the Netherlands (see table 4.5). Local authorities levy roughly 59 per cent of the other taxes on production. The remaining 36 per cent and 5 per cent are levied by the State and European Union (EU), respectively.

Table 4.5 Other taxes on production (D.29), 2015

	million euros	%
Taxes on land, buildings or other structures	**5.868**	**61,5**
Property tax	3.691	38,7
Polderboard levies	832	8,7
Special levies on social housing corporations	1.345	14,1
Taxes on motor vehicles	**1.069**	**11,2**
Motor vehicles tax (National)	767	8,0
Motor vehicles tax (Provincial)	302	3,2
Taxes on payroll and workforce	**658**	**6,9**
Environmental taxes	**758**	**8,0**
Sewage charges	245	2,6
Levies on water pollution	328	3,4
Emission permits	137	1,4
Other environmental taxes	48	0,5
Other	**1.181**	**12,4**
Tourist tax	206	2,2
Bank levies (National)	478	5,0
Bank levies (EU)	454	4,8
Other taxes on production n.e.c.	43	0,5
Total	**9.534**	**100**

The taxes as listed in table 4.5 are classified as other taxes on production (D.29) in accordance with sections 4.22-4.24 from ESA 2010. The principle difference in relation to taxes on products (D.21) is that the latter are levied on outputs (e.g. excise duties), whereas other taxes

on production relate to inputs (e.g. taxes on the use of motor vehicles). Taxes on products (D.21) are summarised in section 3.29 of the GNI Inventory.

Please note that certain taxes such as the motor vehicle tax and sewage charges can be recorded as either other taxes on production (D.29) or other current taxes (D.59), dependent on whether they are levied on producers (D.29) or consumers (D.59).

4.10 Other subsidies on production

The other subsidies on production (D.39) equalled to 7917 million euros in 2015, corresponding to roughly 1.1 per cent of GDP at market prices. Subsidies related to R&D, wages and public transport accounted for more than half of the other subsidies on production in the Netherlands (see table 4.6). The State alongside other central government bodies and the social security funds provided 61 per cent of the other subsidies on production. The remaining 20 per cent and 19 per cent of the subsidies are provided by the European Union (EU) and local authorities, respectively.

Table 4.6 Other subsidies on production (D.39), 2015

	million euros	%
Subsidies granted by the general government	**6.319**	**79,8**
Wage subsidies	1.412	17,8
R&D subsidies	1.475	18,6
Public transport subsidies	1.070	13,5
Subsidies related to culture, sport and recreation	353	4,5
Education fund medical specialists	1.016	12,8
Other subsidies to health care providers	329	4,2
Subsidies related to apprenticeships	189	2,4
Agricultural subsidies	5	0,1
Other subsidies on production n.e.c.	470	5,9
Subsidies granted by the institutions of the EU	**1.598**	**20,2**
Agricultural subsidies	924	11,7
R&D subsidies	437	5,5
Structural funds subsidies	111	1,4
Other subsidies on production n.e.c.	126	1,6
Total	**7.917**	**100**

Subsidies listed in table 4.6 are classified as other subsidies on production (D.39) in accordance with sections 4.36-4.40 from ESA 2010. Whether subsidies are classified as subsidies on products (D.31) or as other subsidies on production (D.39) is dependent on which basis the subsidies are granted. Subsidies granted on the basis of confirmed output (such as sustainable energy subsidies) will be classified as D.31, whereas subsidies granted to cover the costs of inputs (such as wage subsidies) will be classified as D.39. Subsidies on products (D.31) are summarised in section 3.30 of the GNI Inventory.

4.11 Gross operating surplus

As gross operating surplus is a residual item in the supply and use system, strictly speaking the income approach is not applied in the Netherlands in the sense that for all components of value added estimates are made based on independent sources. Nevertheless for mixed income independent estimates are made (see section 4.12). Furthermore, a semi-confrontation between the production approach and the income approach is made during the process of data validation. In this confrontation, the operating result from the data sources from the production approach are compared with the operating result from the data sources from the sectoral accounts. Section 6.1.2.4 provides further information on this confrontation.

For non-market producers gross operating surplus equals consumption of fixed capital (see section 4.13 for more details).

4.12 Mixed income

Mixed income occurs only within the sector households. Operating surplus/mixed income of households amounts to 73189 million euros of which 10662 million is imputed income from owner occupied dwellings, resulting in an estimate for mixed income of 62527 million.

Table 4.7 Process table for mixed income

		Mixed income
Basis for national accounts figures		
Surveys & Censuses	(1)	-
Administrative records	(2)	46.856
Combined Data	(3)	4.567
Extrapolation and Models	(4)	-
Other	(5)	-
Total (sources)	(6)	51.423
Adjustments		
Data validation	(7)	-
Conceptual	(8)	571
Exhaustiveness	(9)	8.907
Balancing	(10)	1.626
Final estimate	(11)	62.527

For the estimation of income and labour of self-employed persons data came available from 2010 onwards (Satellite un-incorporate enterprises). This satellite contains individual tax declarations for the self-employed, including fiscal income and profits. For the compilation of the labour accounts this information is used to estimate variables concerning self-employed. The data are also used for estimating the dual classification of production, intermediate consumption and value added and its components in order to link the supply and use tables to the institutional sector accounts. Conceptual adjustments are made for the transformation of insurance premiums to insurance services (626 million euros) and the allocation of fisim (-55 million euros) based on data from the supply and use tables.

Another part of mixed income is the rental from dwellings and other property. The estimate is based on a combination of data sources. For the rental from dwellings the rent survey of Statistics Netherlands is used. This source gives the weighted sum of the value of dwellings and the weighted sum of rent received from dwellings and garages. The production of rentals from private investors is balanced with the total in the supply and use tables. Finally a balancing adjustment (717 million euros) is made to divide the surplus in the SUT over the institutional sectors. This is done proportionally over S.11 and S.14 using the share found in the rent survey.

For rentals of other property including company buildings, the Wealth Statistics of Statistics Netherlands (based on data from the tax authorities) is used. This gives the value of other dwellings and other property excluding the second homes. From this, the value of dwellings rented by private investors from the rent survey is subtracted to derive the sum of the value of other property only. The share of this figure in the total value of non-private non-dwelling property is determined. This share is used to allocate the SUT totals to S.14. This results in a mixed income of 1468 for rentals from dwellings and 3816 for rentals of other property.

Also included as a balancing adjustment is mixed income from recuperation by households. It is assumed that 50% of the unclaimed supply in the supply and use tables is earned by households.

Furthermore part of income earned in the non-observed economy is allocated to mixed income. The total amount of 8907 million euros is taken from the supply and use tables.

4.13 Consumption of fixed capital

The OECD (2001) handbook on Measuring Capital provides the methodological underpinnings of capital-related macroeconomic statistics such as consumption of fixed capital, net capital stocks and capital services. The handbook shows that these different statistics are interrelated and should preferably be constructed consistently, based on one conceptual framework. Such a framework has been developed as part of the Dutch national accounts. In this framework the following types of capital stocks are distinguished:

- The framework starts off with the compilation of *gross* capital stocks on the basis of estimated discard functions. The gross capital stock represents the replacement value of all fixed assets used in production. Replacement value means that these assets are valued at current market prices;
- The *productive* capital stock is subsequently derived from the gross capital stock. The productive stock reflects the level of capital services an asset is able to generate. The productive capacity of assets is postulated with the aid of so-called age-efficiency profiles. It is assumed that the age-efficiencies of most assets decline over their service lives as a result of normal wear and tear. The total productive capital stock of a particular asset type is derived by aggregating assets of various vintages according to their transformation into efficiency units. Productive stocks are particularly useful for productivity measurement purposes;
- The *net* capital stock represents the actual market value of all fixed assets used in production. As most capital goods are sparsely traded on second hand markets, market values are approximated based on estimates of the net present value of current and future capital services a capital good is expected to generate during its remaining service life. These expected flows of current and future capital services are determined with the aid of the above mentioned age-efficiency profiles.

The three distinguished types of capital stocks are interrelated and in the Dutch PIM they estimates using the following methods:

Gross capital stock

The replacement value $V_{j,t}$ in year t of assets purchased in year j (vintage j) is determined as follows:

$$V_{j,t} = I_j \prod_{i=j+1}^{t} P_i = V_{j,t-1} P_t \qquad (1)$$

Variable Ij denotes investments in historic prices and Pi denotes the corresponding price index of year i (where Pi =1 if prices do not change in year i). So, all investments are re-valued to current prices.

The gross capital stock $GCS_{j,t}$ of vintage j equals the replacement value of all capital goods purchased at j that are still used in production. Their gross capital stock is determined by multiplying the replacement value $V_{j,t}$ by a corresponding survival rate S_{t-j}. This survival rate denotes the fraction of assets of age $t-j$ that is expected still to be in service.

$$GCS_{j,t} = V_{j,t} S_{t-j} = S_{t-j} I_j \prod_{i=j+1}^{t} P_i \qquad (2)$$

The total gross capital stock GCS_t is determined by aggregating over the various vintages j (assets of a particular asset type purchased at j).

$$GCS_t = \sum_{j=0}^{t} GCS_{j,t} \qquad (3)$$

Productive capital stock

The productive capacity of capital goods is determined by their age-efficiency AE_{t-j}. An age-efficiency function indicates the development of the productive capacity of assets over their service life. For most asset types it is assumed that their age-efficiency declines over time.

The age-efficiency parameter AE_{t-j} represents the *average* age-efficiency of all assets of the age $t-j$ that are still used in production. The age-efficiency varies between 1 (new) and 0 (at the end of an assets service life). The age-efficiency parameter AE_{t-j} is a weighted average of individual age-efficiency profiles of all assets of age $t-j$ that are part of the gross capital stock at time t. This average must be taken since assets of a particular vintage will have diverging survival probabilities.

The parameter AE_{t-j} indicates the average age-efficiency level of a particular capital stock of vintage j compared to an identical brand new capital stock purchased at time t. The concomitant productive capital stock ($PCS_{j,t}$) is calculated as follows.

$$PCS_{j,t} = AE_{t-j} GCS_{j,t} \qquad (4)$$

The average age-efficiency profile is determined by describing the productive capital stock directly as a function of the replacement value ($V_{j,t}$) of all investments in year j. For this purpose the total age-efficiency profile TAE_{t-j} is introduced. The total age-efficiency profile entails the average of age-efficiency profiles of individual capital goods of the vintage j, weighted by their survival probabilities.

$$PCS_{j,t} = TAE_{t-j} V_{j,t} \qquad (5)$$

These individual age-efficiency profiles $A_{M,t-j}$ are assumed to be determined only by age $t-j$ of the corresponding asset and its ultimate service life M. The variable L_M in the following equation denotes the probability of an asset to end its service life after M years.

$$L_M = -\frac{d}{dM} S_M \qquad (6)\ 21$$

The total age-efficiency is then determined as follows.

$$TAE_{t-j} = \int_0^\infty A_{M,t-j} L_M \, \mathrm{d}M \qquad (7)$$

It is assumed that the age-efficiency levels of discarded assets equal zero.

The total productive capital stock is ultimately determined by aggregating the productive capital stocks, as estimated above, for each of the different vintages j.

Net capital stock

The net (wealth) capital stock NCSj,t, representing all assets of vintage j, is determined by calculating the net present value of expected capital services (or rents) generated by this group of assets.

$$NCS_{j,t} = \int_0^\infty \frac{R_{j,t-j+\tau} \, \mathrm{d}\tau}{(1+r)^\tau} \qquad (8)$$

The variable $R_{j,t-j+\tau}$ denotes the expected capital services in year $t+\tau$ (at current prices) derived from presently $t-j$ old assets. Variable r represents the real discount rate.

Developments in the volume levels of capital services are determined by the total age-efficiency profiles. This implies that the rents in prices of year t derived from all assets of the vintage j can be described as a constant $C_{j,t}$ times the total age-efficiency profile TAE_{t-1}:

$$R_{j,t-1} = C_{j,t} TAE_{t-1} \qquad (9)$$

The net capital stock of all assets of the vintage j can then be determined as follows.

$$NCS_{j,t} = C_{j,t} \int_0^\infty \frac{TAE_{t-j+\tau} \, d\tau}{(1+r)^\tau} \qquad (10)$$

The so-called age-price profile APt–j represents the net value of vintage j stocks at time t as percentages of their replacement values. The age-price profile can be determined independently from the constant Cj,t.

$$AP_{t-j} = \frac{NCS_{j,t}}{NCS_{j,j}} = \frac{\int_0^\infty \frac{TAE_{t-j+\tau} \, d\tau}{(1+r)^\tau}}{\int_0^\infty \frac{TAE_\tau \, d\tau}{(1+r)^\tau}} \qquad (11)$$

The so-called asset market equilibrium condition implies that the net present value of both past and expected capital services, as determined by the total age-efficiency profiles, derived from

[21] For assets with relatively short service lives, using a discrete version of this equation may in certain cases lead to measurement inaccuracies. Therefore the continuous version is used instead for net capital stock calculations.

all asset of the age $t-j$ equals their replacement value $V_{j,t}$. This condition is expressed by the following equation.

$$V_{j,t} = C_{j,t} \int_0^{\infty} \frac{TAE_\tau \, d\tau}{(1+r)^\tau} \qquad (12)$$

The corresponding net capital stock at any point in time t can then be determined by substituting equations (12) and (11) in equation (10).

$$NCS_{j,t} = C_{j,t} \, AP_{t-j} \int_0^{\infty} \frac{TAE_\tau \, d\tau}{(1+r)^\tau} = V_{j,t} \, AP_{t-j} \qquad (13)$$

As a result, the net capital stock of assets of vintage j is determined by the replacement value $V_{j,t}$ times its corresponding age-price profile. The total net capital stock is simply derived by adding up the corresponding wealth stocks of all vintages.

Balance sheets

The subsections above illustrate how the gross, productive and net capital stocks are derived in sequential order from investment time series in current and constant prices. Balance sheets are constructed to keep a systematic record of all changes in assets in the current year. The changes between opening and closing stocks entail the following entries:

- asset price changes;
- gross fixed capital formation;
- consumption of fixed capital;
- other changes in the volume of assets, such as sales and purchases of second-hand assets, reclassifications and bankruptcies. Although sales and purchases are part of gross fixed capital formation, for practical reasons they are registered as other changes in assets in the PIM framework.

ESA 2010 (3.139) defines consumption of fixed capital (D_t) as the decline in value of fixed assets as a result of normal wear and tear and obsolescence. Consumption of fixed capital is measured in average prices in the current year. This implies that holding gains and losses are not accounted for in terms of depreciation but as asset price changes. Catastrophic losses are equally excluded from depreciation but accounted for in terms of other changes in assets.

For assets purchased in year j, in the Dutch PIM consumption of fixed capital is determined as the annual change in the value of assets, measured in current prices, before the recording of fixed capital formation and the other volume changes in assets. Another way to estimate the consumption of fixed capital of assets belonging to vintage j is to multiply their replacement value by the corresponding change in the age price profile.

$$D_{j,t} = P_t \, NCS_{j,t-1} - NCS_{j,t} = V_{j,t} \left(AP_{t-j-1} - AP_{t-j} \right) \qquad (14)$$

The other changes in assets include major sales of assets such as buildings, dwellings and transport equipment (specifically related to the termination of car lease contracts). Two problems emerge in recording sales and purchases of second-hand assets:

- In most cases the age of capital goods that change ownership is unknown. This information is obviously required and therefore assumptions about the average age of sold assets must be made;

- Because of existing differences in services lives, age-efficiency profiles and price developments between different industries, the recording of changes in ownership may lead to (usually small) discrepancies between gross, productive and net capital stocks. Since these discrepancies are usually rather small they are simply ignored.

Various conventions, based on historic cost price and/or fiscal service life, are in agreement with the calculation methods of depreciation in business accounts. This means that the extent of depreciation of assets cannot be directly derived from commercial surveys as they will differ from the national accounts concept. In case of national accounts, consumption of fixed capital is determined with reference to historical series of fixed capital formation using the perpetual inventory method. Consumption of fixed capital is calculated for produced tangible assets (excluding cattle) and intangible assets including public service infrastructure. We distinguish 28 asset types in total for all main sectors (5; S11; S12; S13; S14 and S15) and branches (NACE rev. 2).

Newly included fixed asset categories are weapon systems and R&D. This is in line with the conceptual changes when moving from the 1995 to the 2010 ESA.

The perpetual inventory method (PIM) starts with the value of the capital stock of fixed assets at the beginning of the year. This stock is brought to replacement value by adjusting for price changes in comparable fixed assets during the accounting year. Gross fixed capital formation in that year is added to this figure and the value of suspended assets is subsequently deducted. The result is the fixed capital stock value at the end of the year. The first step is calculating age-price profiles of assets based on the net present value of postulated future rental flows. Next, consumption of fixed capital is calculated with the help of these age-price profiles.

The age-price profiles are calculated based on information about the survival functions, the age-efficiency functions of the assets is needed and a discount rate.

The survival function is based on a Weibull function which offers both sufficient simplicity and adequate flexibility:

$$S_{Wei}(t) = \exp\left(-(\lambda t)^{\alpha}\right) \qquad t \geq 0 \tag{15}$$

where $\lambda = \exp\left(\Gamma\left(1+1/\alpha\right)\right)/L$. Here, Γ refers to the Gamma function, L is the average service life and α is a shape parameter. The empirical estimation of the Weibull mortality function parameters is explained in the annexes 4.1 and 4.2. For the age-efficiency function, a Winfrey function is used:

$$\begin{aligned} A_{\text{Win}}(M,t) &= \frac{M-t}{M-\beta t} && \text{M} > \text{t} \\ &= 0 && \text{M} \leq \text{t} \end{aligned} \tag{16}$$

where M refers to the maximum age of the asset and β is a shape parameter. For establishing the depreciation function, hyperbolic age-efficiency profiles were postulated with the help of the Winfrey function (OECD, 2001, par. 6.75), as presented in equation 16. The β parameter in this function determines the initial efficiency losses at the beginning of an asset's services lives. The βparameter may vary between 0 and 1. A value of 1 indicates a constant level performance, also referred to as a 'one-hoss-shay'. We selected a β value of 0.5 for asset types like machinery and installations and transport equipment, a value of 0.75 for industrial buildings and dwellings and a value of 1.0 for computers, software and other intangible fixed assets.

For the discount rate, a constant real rate of 4 per cent is used. This is in line with government practice for government investments for most years covered. In recent years government real discount rate has been lowered to 2.5 per cent. In keeping a comparable time series, this change was not implemented in the Dutch PIM.

The alpha is estimated for all combinations of industries (NACE) and type of asset for which a fixed capital stock was observed. Every effort is made to optimise the correlation between calculated and observed fixed capital stock. An alpha of 2.5 was chosen for all combinations without observed data.

The beta is based on data from the Australian Bureau of Statistics (ABS) and the Bureau of Economic Analysis (BEA) in the USA and on expert guesses. The fixed assets in estimating CFC cover all fixed assets (except animal livestock) including intellectual property products.

All conceptual changes relating to ESA 2010 have been introduced in the estimates for GFCF and subsequently been introduced in the PIM, and hence CFC. For each asset long time series have been constructed, making it possible to construct balance sheets for each asset type and estimating the CFC using the parameters of the Dutch PIM.

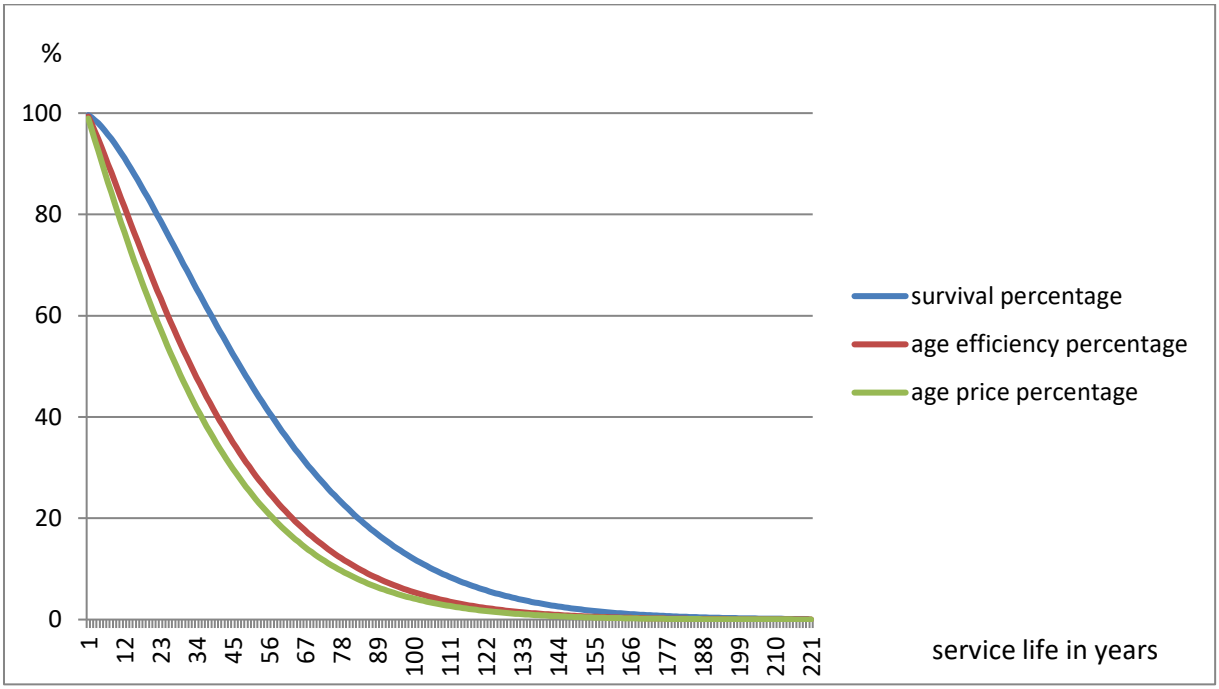
For the revision year and definitive years (t+18 months) the Dutch PIM uses 82 branches (NACE rev2.) times 5 sectors times 28 asset types. The table below shows the service lives of the branches and the asset types. At sector level service lives are obtained from the branch to which a sector relates. Service lives of the same asset category may vary between NACE rev 2 branches.

Service lives and retirement

A full investigation of service lives has been conducted in 2008 (see annex 4.2). The research concentrated on the manufacturing industry. No special attention was given to composition of GFCF in public infrastructure. For the 2015 estimates service lives of some types of assets were revised. A summary can be found below. The retirement function is described above. Using a Weibull mortality function implies that assets in one vintage are not discarded at the same point in time, also known as the simultaneous exit assumption. In other words, service lives follow a distribution, described in a by the Weibull function. Therefore the minimum and maximum average service lives are shown in the table 4.8 below.

The age-price profile in figure 4.1 shows that the Dutch PIM largely approximates a geometric depreciation pattern as shown by the age-price percentage.

Figure 4.1 Survival percentage, age-efficiency percentage and age-price percentage for Other Structures NACE 84 and 85 for a single vintage



For the following asset categories, dwellings, telecommunication equipment, civilian aircraft and military aircraft have been changed in the course of the 2015 revision.

Dwellings

In the first half of 2017 detailed in-house research was undertaken to calculate new service life estimates for dwellings. This research was based on duration models and looked at the stock of dwellings and demolitions within the Netherlands. In addition to the model approach an investigation was also undertaken into the remaining service life of dwellings owned by housing corporations. Housing corporations submit estimates of the remaining service life of their dwellings, stratified by year of construction, to a number of government ministries and agencies. By combining the results from the duration model approach with the housing corporation estimates a range of between 67 and 79 years has been estimated for the service life of dwellings.

The stock of dwelling consists of new builds and renovated existing dwellings. Major renovations and maintenance decreases the likelihood of dwellings requiring demolition and therefore results in longer estimates of service life. That is, estimates of the average service life of existing dwellings is impacted positively by maintenance and repair leading to an overestimation of expected service life of this asset. These major renovations are part of gross fixed capital formation, and classified under the asset “dwellings”. This means that the asset “dwellings” actually consists of two sub-assets: new dwellings and major renovations. The consequence of this is that the estimated service life based on the data is an overestimation: the underlying service life of most new dwellings has already been passed once they show up in the data, because the major renovation helps the asset avoid its demolition. Also, this major renovation has most likely a shorter service life than the dwelling itself. For the new asset we assume a service life of still 75 years. Any major renovation will then take place, by assumption, after 50 years, and these we will assume the service life is 25 years. To calculate an average we

need to establish weights. From the SUT's we take product groups to approximately divide the two. We roughly take 85 percent of investment to go to new dwellings and 15 percent to renovation works. When we multiply and add these figures we get a service life of 67 years: (75 * 0.85 + 25 * 0.15 = 67).

Telecommunications equipment

The rapid pace of technological development within the telecommunications industry means that these assets become obsolete within a relatively short time period. Pre the 2015 revision CBS applied an estimated service life of 5 years. Following further investigation this has been reduced to 4 years to account for the acceleration in technological progress of these assets and therefore obsolescence. In the past, landlines had a dominant share within this asset-type. However, the share of mobile communication devices has increased, but those products have a much shorter service life. In a survey done by a Dutch consumer organization, mobile devices turned out to have a service life of just 2.5 years[22]. There is little reason to assume that company owned mobile devices have a higher service life, since consumers and companies typically buy the same sort of mobile phones and we expect companies to use their devices intensively. Fixed telecommunication devices have a service life of approximately 7 years[23]. To reflect the larger share of mobile devices, a conservative assumption is made that the share of mobile devices is twice as high. This then results in a service life of 4 years: (2.5 + 2.5 + 7) / 3 = 4.

This asset type also contains modems, but information on these goods is lacking. The new estimate of average service life applies for all telecommunication equipment with a construction year of 2015 or later.

Civilian aircraft

Up until the 2015 revision the service life of civilian aircraft within the Netherlands was assumed to be 16 years. This was in part down to a study of the average age of the fleet of aircraft at KLM. However average fleet age is not a good and correct indicator for service life since aircraft are usually sold when still in good working order and therefore not at the end of their service life**.**

Research into the service life used by other NSIs, namely Norway[24] has shown that longer average service life estimates are used. Norway and Germany both use estimates of 20 years in their calculation of CFC and capital stocks of civilian aircraft. Because we assume these assets will be very similar across countries, CBS has therefore also chosen to also use an estimate of 20 years for aircraft constructed in or later than 2010.

Military aircraft

Military aircraft typically have a longer service life than civilian aircraft due in part to their less intensive use. Previously aircraft for military purposes were assumed to have a service life of 25 years. A source from the ministry of defence commented in an oral discussion that this figure was too low. Also a discussion with the German federal statistical office revealed that the service life should be longer. Combining the information from both sources it was established

[22] Consumentenbond 2016
[23] Computer profile 2015
[24] Barth 2016

the service life should be 34 years. This new estimate of service life is applied to all military aircraft with a construction year of 1995 or after.

Table 4.8 Information on the service life by assets

Asset type	Minimum average service life	Maximum Average service life
Dwellings (AN.111)	67	67
Buildings (AN.1121)	27	46
Other structures, incl land improvements (AN.1122 and AN1123)	25	55
Passenger cars (AN.1131)	8	12
Other road transport equipment (AN.1131)	8	12
Trains and trams (AN.1131)	28	28
Ships (AN.1131)	35	50
Civilian Aircraft (AN.1131)	20	20
Computers (AN.1132)	5	14
Machinery (AN.1139)	10	43
Livestock (not estimated with the PIM) (AN.1151)	0	0
Other cultivated assets (AN.1152)	15	15
Other machinery and equipment (AN.1139)	8	12
Transfer of ownership cost of land (AN.116)	14	23
Transfer of ownership cost of existing dwellings (AN.111)	20	20
Transfer of ownership cost of existing buildings (AN.1121)	14	23
Mineral exploration (AN.1172)	20	20
Computer software and databases (AN.1173)	4	4
Entertainment, literary and artistic originals (AN.1174)	5	5
Other intellectual property products (AN.1179)	10	10
Transfer of ownership cost on non-produced non-financial assets (AN.116)	3	3
Telecommunication equipment (AN.1132)	4	4
Research & Development (AN.1171)	9	15
Weapons systems (AN.114)	10	34
of which military aircraft	34	34

Table 4.9 Parameters of the Dutch PIM for NACE 84 and 85

SIC	Asset type	alpha	beta	average service life
84	Buildings(AN.1121)	2,16	0,75	34
84	Machinery (AN.1139)	2,5	0,5	12
84	Transfer of ownership cost of land (AN.116)	2,16	0,75	17
84	Transfer of ownership cost of existing buildings (AN.1121)	2,16	0,75	17
85	Buildings(AN.1121)	2,16	0,75	44
85	Transfer of ownership cost of land (AN.116)	2,16	0,75	22
85	Transfer of ownership cost of existing buildings (AN.1121)	2,16	0,75	22
84 and 85	Dwellings (AN.111)	2,5	0,75	67
84 and 85	Other structures, incl land improvements (AN.1122 and AN1123)	1,5	0,75	55
84 and 85	Other road transport equipment (AN.1131)	1,31	0,5	7
84 and 85	Trains and trams (AN.1131)	1,7	0,5	28
84 and 85	Ships (AN.1131)	2,5	0,5	35
84 and 85	Civilian Aircraft (AN.1131)	1,2	0,5	20
84 and 85	Computers (AN.1132)	2,5	1	5
84 and 85	Livestock (not estimated with the PIM)(AN.1151)	NA	NA	NA
84 and 85	Other cultivated assets (AN.1152)	2,5	0,75	15
84 and 85	Other machinery and equipment (AN.1139)	2,63	0,5	8
84 and 85	Mineral exploration (AN.1172)	2,5	1	20
84 and 85	Computer software and databases (AN.1173)	2,5	1	4
84 and 85	Entertainment, literary and artistic originals (AN.1174)	2,5	0,75	5
84 and 85	Transfer of ownership cost on non-produced non-financial assets (AN.116)	2,5	1	3
84 and 85	Transfer of ownership cost of existing dwellings (AN.111)	2,5	0,75	20
84 and 85	Other intellectual property products (AN.1179)	2,5	0,75	10
84 and 85	Weapons systems, electronic and communication devices (AN.114)	2,5	0,5	10
84 and 85	Weapons systems, weapons and tanks (AN.114)	2,5	0,5	30
84 and 85	Weapons systems, vehicles (AN.114)	2,5	0,5	10
84 and 85	Weapons systems, ships (AN.114)	2,5	0,5	25
84 and 85	Weapons systems, aircraft (AN.114)	2,5	0,5	34
84 and 85	Passenger cars(AN.1131)	1,31	0,5	7
84 and 85	Telecommunication equipment (AN.1132)	2,5	0,5	4
84 and 85	Research & Development (AN.1171)	3	0,75	12

The table below shows the changes in service lives for all assets for which changes were made. In cases for which service lives vary between economic activities, the most common service life is shown.

Table 4.10 Service life of fixed assets

Asset type	Previous	Current
Dwellings (AN.111)	75	67
Telecommunication equipment (AN.1132)	5	4
Civilian Aircraft (AN.1131)	16	20
Military Aircraft (AN.114)	25	34

Reclassification of government assets

Reclassifying assets in or out of the government sector (S.13) is based on information of government finance statistics, or information from the media. Based on the information available, a certain percentage of existing stock of assets is taken, and transferred to or from S13 from or to another sector (and / or branch). In one example, the government obtained ownership of the real estate portfolio of a bad performing bank. In practice, such an event is recorded in the PIM by determining a percentage of the net capital stock related to banking on the basis of which a transfer of non-financial assets (real estate) from banking to the government is being recorded. Such recordings are usually done in the PIM at the end of the reference year, however based on more precise information on the reclassification date; it could be decided to record the transfer of the assets at the start of the reference year.

Public infrastructure

The government finance statistics provide information on GFCF of non-residential buildings, residential buildings and public infrastructure. Infrastructure or civil engineering works is headed under the “Other structures” asset category; Statistics Netherlands follows the required level of detail of asset types as specified by the ESA 2010 transmission programme of data. The recommended level of detail of GNIC/011 is not followed. The available data sources are insufficiently detailed to support a breakdown of other structures into roads and the remainder. Particularly business surveys cannot be separated to address roads, bridges and civil engineering.

Consumption of fixed capital is to be calculated for all fixed assets, including public service infrastructure (other structures). This is done by using the perpetual inventory method. The result is recorded as gross operating surplus with government, and is thus part of government output and government consumption. The estimate of consumption of fixed capital depends – among other things – on the service lives of assets under government ownership. The Weibull mortality function is used, so as to avoid simultaneous exit. The only exception relates to railways, where overhead wires, with an average service life of 25 years, make up a large part of the assets. In the branch of service activities incidental to railroad infrastructure (part of NACE 52.21), an average service life of 40 years is used. The assumption is made that overhead wires represent half of the net stock of the asset “other structures”, so that the service life can be calculated as (25 + 55) / 2 = 40.

Results from the German federal statistical office pointed towards an estimate of 52 years for roads. Information from a public audit service from the Netherlands indicates the range to be

between 30 and 60 years[25] and a research institute indicates the service life of physical infrastructure to be between 50 and 100 years (TNO). Summing up, the range of service lives is very broad. Therefore it is decided to adhere to the current service life of 55 years which is also recommended by the GNIC.

The Dutch PIM maintains a distinction between market CFC and non-market CFC. This distinction is already made in GFCF statistics as maintained in the PIM. Statistics Netherlands has not recently reviewed the correct allocation of public infrastructure to the government sector. However, in relation to EDP statistics the demarcation of the government sector is continuously being reviewed. This has not led to major reclassifications in government fixed asset ownership. In the branch of service activities incidental to railroad infrastructure (part of NACE 52.21) and lower levels of government new data source (IV3) has been used for estimating infrastructure GFCF, which led to changes from the previous time series. Further information on statistical sources for government finance statistics can be found in Chapter 3, Section 21. No separate CFC estimations are available for asset types such as railways or sewage systems. In 2015 the percentage of other buildings in the total net capital stock for the sector government (S.13) amounts to 64 per cent.

Consistency of the time series

In the GFCF time series (back to 1952) only small amounts of assets are reclassified from and to the government sector. There is parse evidence for the recording of such reclassifications.

All changes are processed in the time series, starting in 1952. At the same time the time series was corrected for possible level shifts. GFCF in software was introduced in the entire time series, however with zero estimates for the early years.

For the period 1995-2015 GFCF series for the government were benchmarked based on available data sources. The series prior to 1995 were left unaltered.

R&D and entertainment, literary and artistic originals

The recommendation of the final report of the second OECD/Eurostat Task Force [26]on the capitalisation of R&D in National Accounts to exclude CFC of R&D from the production of R&D assets is followed. This means that CFC of R&D of government is recorded as government consumption and not as a part of R&D production. Following the recommended geometric depreciation profile by the same Task Force, the Weibull function provides a suitable alternative (see Figure 4.8). Service life estimations are based on patent data and service lives vary between 9 years and 15 years, depending on the related industry. The service life of R&D assets in the government sector has been set at 12 years as described in the table “Parameters of the Dutch PIM for NACE 84 and 85” above (Table 4.9).

Concerning the treatment of CFC of entertainment, literary and artistic originals again a profile close to a geometric depreciation profile is used whereby for each vintage 80 per cent of the asset value is depreciated after 4 years. The service life of 5 years is in line with the recommendation of the GNI committee which set the lower bound service life at 5 years.

[25] Noordelijke Rekenkamer (2015)

[26] OECD/Eurostat (2012), ‘Final Report Second Task Force on the capitalisation of Research and Development in National Accounts’

GFCF and related assets are estimated to be zero for the government (S.13). As part of the non-market sector, in 2015 NPISH hold entertainment, literary and artistic originals worth of 131 million euros.

Resulting table CFC by sector and asset

In table 4.11 the results are summarized for the consumption of fixed capital in a breakdown by sector and asset in the AN classification.

Table 4.11 CFC by sector and asset, 2015

	Sector				
	S11	S12	S13	S14	S15
Type of asset (AN classification)	*Million euros*				
Dwellings (AN.111)	3121	396	62	13352	0
Buildings (AN.1121)	9430	488	4341	3379	37
Other structures (AN.1122/AN.1123)	4208	2	7032	96	3
Passenger cars (AN.1131)	3700	47	106	423	7
Other road transport equipm. (AN.1131)	1244	6	248	225	2
Trains and trams (AN.1131)	470	0	0	0	0
Ships (AN.1131)	627	0	51	140	0
Civilian Aircraft (AN.1131)	499	0	62	6	0
Computers (AN.1132)	2373	400	814	324	15
Machinery (AN.1139), weapon systems (AN.114)	13118	40	1275	1931	13
Livestock (not by PIM) (AN.1151)	0	0	0	0	0
Other cult. Assets (AN.1152)	21	0	0	69	0
T. O. cost of land (AN.116)	318	319	199	291	0
T. O. cost of existing dwellings (AN.111)	605	13	0	2765	0
T. O. cost of existing buildings (AN.1121)	102	28	23	86	0
Mineral exploration (AN.1172)	468	0	0	0	0
Comp. software/databases (AN.1173)	10741	1802	3047	1317	45
Entertainm., lit. and art. orig (AN.1174)	313	0	0	111	53
Other intell. Property prod. (AN.1179)	0	15	0	0	0
T. O. cost non-pr. non-fin. Ass. (AN.116)	1	0	0	2	0
Telecomm. equipment (AN.1132)	689	39	187	92	8
Research and Development (AN.1171)	7292	482	3320	401	16
Other mach. and equipment (AN.1139)	3890	117	1389	941	11

CHAPTER 5 THE EXPENDITURE APPROACH

5.1 GDP according to the expenditure approach

Table 5.1 provides a breakdown of GDP in 2015 according to the expenditure approach by component. The total of GDP and imports of goods and services (1.208.602 million euros) gives the total of goods and services 'Disposable for final expenditure' and equals by definition the 'Total final expenditure'. Table 5.1 shows that total imports of goods and services equals 75.2 per cent of GDP at market prices in 2015 while exports account for 82.7 per cent. On balance foreign trade accounts for 7.5 per cent of GDP.

National final expenditure (the summation of final consumption expenditure, fixed capital formation (gross) and changes in inventories, corresponding to 638.249 million euros) accounts for 92.5 per cent. The size of final consumption expenditure to GDP equals 70.0 per cent in 2015 of which final consumption expenditure of households (including non-profit institutions serving households) accounted for 45.0 per cent of GDP. Gross fixed capital formation (GFCF) is 22.1 per cent of GDP in 2015.

Table 5.1 GDP according to the expenditure approach by component, 2015

	mln €	% GDP
Final consumption expenditure	483.170	70,0
General government	172.354	25,0
Households incl.NPIs serving households	310.816	45,0
Fixed capital formation (gross)	152.533	22,1
Corporations, households and NPIs serving households	127.953	18,5
General government	24.580	3,6
Changes in inventories	2.546	0,4
Exports of goods and services	570.353	82,7
Goods	418.373	60,6
Services	151.980	22,0
Imports of goods and services (-)	518.594	75,2
Goods	352.926	51,1
Services	165.668	24,0
Domestic product (gross, market prices)	690.008	100,0

5.2 The reference framework

At Statistics Netherlands final expenditure is estimated within the framework of supply and use tables, in which (as far as possible) independent estimates of output, intermediate consumption and final expenditure are confronted and balanced. The balancing process assures full consistency of GDP according to the expenditure, production and income approach.

The main sources for the estimation of final consumption expenditure by households (including NPISH) are the SBS statistics on retail trade, the household budget survey and dedicated supplementary information on for example expenses on passenger cars. For GFCF annual surveys of Statistics Netherlands are used and for changes in inventories most information comes from SBS statistics. For imports and exports of goods international trade in goods statistics are used and for imports and exports of services international trade in services statistics are used, combined with a range of other sources such as information from the Dutch Central Bank (DNB) on financial and insurance services.

5.3 The borderline cases

5.3.1 The borderline cases for HFCE

For Household Final Consumption Expenditure (HFCE) the most important borderline case is the imputed value of dwelling services produced by owner-occupiers. This item is estimated by using the stratification method, in which imputed rents of owner-occupied dwellings are related to characteristics of dwellings (region, floor area and year of construction, (see chapter 3 for more details). For the expenses that owner-occupiers incur on insurance, decoration, maintenance and repair of dwellings not typically carried out by tenants, an explicit adjustment is made on the initial estimates of HFCE resulting from source data, as the latter do not make this distinction (see also section 5.8.3.1 A item 2b). The adjustment is based on the estimates of intermediate consumption linked to owner-occupied dwelling services.

Most business accounts, and therefore business statistics too, classify certain types of expenditure as current costs, whereas ESA2010 requires these to be recorded as wages and salaries. Examples are use of company-cars, meals at work, preferential banking and insurance interest rates and free or discounted travel for transport-company employees. As a consequence output may increase in cases where employees acquire own account produced goods from their employers, while intermediate consumption may be reduced in case expenses must be reclassified to wages and salaries.

Estimates are included for goods and services produced as output of unincorporated enterprises owned by households that are retained for consumption by members of the household, such as food or other agricultural goods.

Purchases and sales of second-hand goods from one consumer to another, so-called C2C transactions, are not specifically addressed in the SUT as they cancel out. Trade margins related to trade in second-hand goods are recorded in a separate product group because no basic value transactions exist. For the sales and purchases of second hand lease cars a separate item is included in the estimates of HFCE and GFCF (disinvestment).

Estimates for FISIM are based on data from balance sheets in combination with various interest rates. In HFCE only FISIM linked to saving accounts and loans are included. FISIM linked to mortgages is recorded as intermediate consumption of SIC 68. Insurance services are estimated by netting the premiums paid using output of insurance companies as a fixed starting point. No explicit estimates are made in case insurers pay directly for repair services. Repair services paid for by insurance are allocated to HFCE because the estimate of output and allocation of, for example, car repair is based on the number and ownership (private or business) of cars. This implies that who is actually paying for the repair service is not leading for the way of recording. For construction a commodity flow approach is applied, so also in this case the actual payer of the repair service does not influence the estimate not the way of recording. A relative important

tax in terms of significance, the BPM, is levied on new cars or imported second hand cars. This tax is recorded as taxes on products, see section 3.29.

Specific borderline cases that are excluded from HFCE are social transfers in kind, payments by households that are to be regarded as taxes and subscriptions, contributions and dues paid by households to NPISH. These expenses are separate items in the household budget survey and therefore exclusion in HFCE is straightforward.

Social transfers in kind mainly concern health care expenses. Government data are used for the estimation of social transfers in kind; the main sources for HFCE do not include these types of payments. Besides for the main products, composing social transfers in kind a commodity flow method is applied for estimation HFCE, assuring no double counting.

5.3.2 The borderline cases for GFCF

Where necessary, adjustments in the processing of data from business statistics are made to assure that expenditure on the following items are recorded as GFCF instead of intermediate consumption:

- R&D (with the exception of the R&D acquired to be used solely in the creation of further products of R&D);
- Structures and equipment used by the military, light weapons and armoured vehicles used by non-military units;
- Mineral exploration and evaluation;
- Intellectual property products such as computer software originals and other intellectual property rights;
- Own account output of computer software.

The estimate of GFCF in livestock is based agricultural statistics. Estimates on improvements to existing fixed assets beyond ordinary maintenance and acquisition of fixed assets via financial leasing, are estimated using the investment survey.

Not included in GFCF but registered as intermediate consumption are items like the normal ordinary maintenance and/or repair costs and the purchase of small tools for general use. For the latter, bookkeeping practices are followed in which expenses on small tools are recorded as current costs. It is assumed that the bookkeeping practices coincide with ESA2010 in this matter. Payments of fees for the use of capital goods under operational lease are recorded as intermediate consumption. The estimates are based on SBS in which the same way of recording is applied. Also not included in GFCF are the transactions that clearly are registered as changes in inventories, like animals bred and raised for slaughter. Machinery and equipment bought by households for the use as final consumption are registered as household consumption and not as GFCF.

5.4 Valuation

All use table data are valued at purchasers' prices excluding value added tax (VAT). This is the consequence of the net registration of value added tax in the Dutch SUT (see chapter 6, section 6.1.2 for more details). As a consequence in the columns of the use table only non-deductible value added tax as an undifferentiated total is recorded. Household final consumption expenditure provides the most striking example. In the case of gross fixed capital formation and

intermediate consumption, net registration merely means that an amount will only be recorded for industries producing goods and services which are exempted from VAT like financial, government and health services.

In some cases, purchasers' price valuation excluding VAT requires adjustment of source data in order to ensure the appropriate valuation in the use table. For example, budget survey data have to be converted in order to exclude value added tax. The same applies to data sources used for intermediate consumption and gross fixed capital formation linked to exempted activities.

The product classification of the Dutch SUTs supports as much as possible homogeneity in relation to the prevailing VAT rates in the Netherlands. The non-deductible VAT is determined for each relevant column in the use-table (i.e. final expenditure category or relevant industry) by applying the prevailing rates to the SUT-estimates excluding VAT for each product group in the concerning column. The total amount of non-deductible value added tax shows up as a separate (row) item in the use table.

HFCE of products produced by the employer and supplied to employees as compensation in kind amounts to 332 million. This concerns mainly services linked to interest discounts (290 million). The remaining 42 million concerns free transport services (see section 7.2.3.5) for which no explicit assumption is made whether the amount is either in basic prices or purchasers' prices. HFCE of products purchased by employers mainly concerns the private use of company cars, untaxed benefits and meals and drinks offered by the employer (see items d, e and g of section 4.8.2). The imputed value of the use of company cars is, in conformity with tax rules, linked to the catalogue value of the company cars. Assumingly these imputed values are at purchaser' prices. The same holds for untaxed benefits derived from administrative sources. Income in kind derived from intermediate consumption, including meals and drinks, will be valued at purchasers' prices excluding VAT.

HFCE of own production concerns mainly agricultural products. The estimate is based on average amounts per product group (valued at basic prices) per head, multiplied by the number of persons living in agricultural households. As the average amounts spent are valued at basic prices, own account HFCE will valued at basic prices as well.

Own-account GFCF is valued at the basic prices, following the market output of similar fixed assets. If such prices are not available, the output will be valued at the costs of production plus a mark-up for net operating surplus or mixed income (except for non-market producers as gross operating surplus is zero by definition). A mark-up is added for software and R&D. For all other types of assets values as reported in Structural Business Statistics prevail.

It is assumed that work in progress is valued at basic prices in correspondence with other output related variables in Structural Business Statistics.

In the use table export is valued at fob prices while in the supply table import is recorded at cif prices. The transition from cif to fob for the valuation of imports is made by applying two lump-sum adjustments. The first is the cif/fob-reclassification which entails a shift of transport and insurance services from imports of goods to imports of services. The second is the cif/fob-adjustment in which imports of goods and exports of transport and insurance services are reduced by the same amount. These adjustments have no impact on the balance of foreign trade and thus no impact on GDP.

5.5 Transition from private accounting and administrative concepts to ESA 2010 national accounts concepts

Individual accounting and administrative concepts are not always aligned with national accounts definitions. An example is gross fixed capital formation in software. Business accounting practice may lead to recording of (parts of) software purchases as current costs. To ensure accurate registration pursuant to ESA 2010, software purchases have to be deducted from intermediate consumption and added to gross fixed capital formation. In addition, own-account software is not generally regarded as gross fixed capital formation, so additional estimates of this item is needed leading to upward adjustments of output. Further, special attention is paid to the delineation of intermediate consumption and GFCF for repair and maintenance of buildings.

Registration differences are also relevant when measuring consumption of e.g. health care and welfare, insurance and contributions to (sports) clubs and associations.

In the Dutch health care system all Dutch residents are obliged to take out a standard health insurance policy. Because of the obligatory character of this insurance, the insurance reimbursements are considered as social benefits in kind and therefore part of government final consumption. Besides this obligatory insurance, households can take out a supplementary insurance for health care treatment not covered by the standard policy.

From the household point of view, as shown for example in the budget survey, only direct expenditure on health insurance premiums, treatments not covered by health care insurance and non-prescription products are regarded as health care expenditure.

This point of view differs from the national accounts' registration, where the reimbursements of the supplementary health care insurances, together with health care services not covered by the (obligatory and supplementary) health care insurance and non-prescribed products are considered as final households consumption. The SUT-estimation for household consumption of health is based on the commodity flow approach.

For insurance the national accounts follow the recording of insurance services instead of premiums paid as typically reported in household administrations and budget surveys.

While households tend to perceive contributions to (sports) clubs and associations as consumption expenditure, the national accounts treat those transactions as income transfers.

Statistics on foreign trade (FTS) in goods are based on crossing border as the leading recording criterion. ESA2010 uses change of ownership between residents and non-residents as criterion for recording imports and exports. This leads to a wider range of discrepancies. For example goods sent abroad for processing are recorded under FTS but should not be included in national accounts imports or exports as no change of ownership takes place when these goods are shipped abroad. The required adjustments are made supported by a combination of FTS-data on processing and SBS data. In case of merchanting, a change of ownership will take place while the traded goods may not enter the merchant's country. SBS-data are used to adjust imports and exports in these cases.

Table 5.2 below shows the various conceptual adjustments made in the expenditure approach.

Table 5.2 Expenditure approach, conceptual adjustments, 2015

	Allocation of FISIM and Spreads	Other conceptual														Total conceptual
		VAT	Consumption of residents abroad	Consumption of non-residents in the Netherlands	Merchanting	Processing /Industrial services	Other global prod. arrangements	Goods returned to sender	Goods procured in ports by carriers	Cif/fob adjustment and reclass.	Transport services	R&D	Revaluation	Not specified	Total	
Household final consumption expenditure	-262	23.792	13.894	-10.991											26.695	26.433
NPISH final consumption expenditure															0	0
General government final cons. expenditure	1.479													-5.216	-5.216	-3.737
Gross fixed capital formation												-277			-277	-277
Change in inventories													-494		-494	-494
Acquisitions less disposals of valuables															0	0
Export of																
Goods					15.348	-31.931	33.425	-3.129	988						14.701	14.701
Services											-444				-444	-444
Import of																
Goods						-26.793	17.036	-3.129	3.373	-5.903					-15.416	-15.416
Services											-44				-44	-44
Total	1.217	23.792	13.894	-10.991	15.348	-5.138	16.389	0	-2.385	5.903	-400	-277	-494	-5.216	50.425	51.642

5.6 The roles of direct and indirect estimation methods and of benchmarks and extrapolations

Indirect final expenditure estimation methods are used in a limited number of cases, when no information is available from direct observation. Own-account GFCF in software is a good example in this respect. As has been pointed out before software not always appears among registered company assets and is therefore not covered by the investment survey. This item is estimated indirectly on the basis of (functional) data concerning the number and costs of EDP (Electronic Data Processing) staff per sector (see section 5.11 for further details).

In the case of final consumption expenditure, indirect estimation methods play a part where direct household expenditure does not correlate with the corresponding national accounts concept. Health care and insurance services have already been discussed. In these cases, the commodity flow method is used to estimate consumption, which is largely determined by output.

The imputed rent value of owner-occupied dwellings constitutes a special case which does not involve a *de facto* transaction, so that an indirect estimation method must always be applied. Consumption is equated to output in this instance.

5.7 The main approaches taken with respect to exhaustiveness

Chapter 7 provides a detailed description of the supplementary estimations addressing exhaustiveness. For the expenditure approach the description of the estimates for HFCE using the budget survey are of particular interest.

Exhaustiveness

The estimate for exhaustiveness in table 5.3 is disaggregated to N-classes. For Household Final Consumption Expenditure (including NPISH) the total estimate of 8.077 million euros is divided into the classes N1 (underground production), N2 (illegal production, drugs, smuggling), N3 (producer is not obliged to register), N6 (cost fraud, elimination of the VAT-gap) and N7 (income in kind). Estimates for CFCF of exhaustiveness consist of estimates investments for cannabis production and energy production by households (solar panels) (N2 and N3) and elimination of the VAT-gap (N6).

Estimates for exhaustiveness of international trade are divided in N2 (illegal transactions), N3 (Airbnb-type activities), N6 (elimination of VAT gap) and N7 (missed part of online trade).

Table 5.3 Estimates for exhaustiveness for final expenditures disaggregated by N-classes, 2015.

Type of final expenditure	Types of non-exhaustiveness								Total
	N1	N2	N3	N4	N5	N6	N7	N8	
Household final consumption	1823	752	196			279	5027		8077
Governm. final consumption									0
Gross fixed capital formation (*)		534	543			-112			965
Internat. trade in goods (balance)		3181					-469		2712
Import		919					873		1792
Export		4100					404		4504
Internat. trade in services (balance)		43	-10			-52	21		2
Import		237	10				45		292
Export		280				-52	66		294
Total	**1823**	**4510**	**729**	**0**	**0**	**115**	**4579**	**0**	**11756**

(*) Including change in stocks and acquisitions less disposals of valuables

5.8 Household final consumption expenditure (HFCE)

5.8.1 Overview

This section provides a summary of the process table for the household final consumption expenditure and a short explanation of the various entries in the process table. More detailed elaboration (on sources, estimation methods, etc.) is given in section 5.8.2 and further.

Table 5.4 provides the process table for household final consumption expenditure in 2015.

Table 5.4 Process table of final consumption expenditure of households, 2015

	Basis for national accounts figures					
	Surv and Censuses	Admin records	Combined data	Extrapol + models	Other	Total
	(1)	(2)	(3)	(4)	(5)	(6)
	million euro					
Household final consumption expenditure	110740	19798	478	140270	0	271286

	Basis (Total)	Adjustments				Final estimate
		Data val.	Concept.	Exhaust.	Balan-cing	
	(6)	(7)	(8)	(9)	(10)	(11)
	million euro					
Household final consumption expenditure	271286	0	26433	8077	-424	305372

(1) Surveys & censuses

The surveys used are the Retail Trade Statistics (RTS, which are part of SBS), the Household Budget Survey (HBS) and various surveys on financial services conducted by the Dutch Central Bank (DNB); see section 5.8.3.1 for further explanation.

(2) Administrative Records

These sources include figures obtained from various branch organisations and market research agencies, such as information on car sales obtained from the RAI and information on own risk health insurance contributions obtained from health insurance companies. See section 5.8.3.2 for further explanation.

(3) Combined data

These sources include figures derived from research carried out by product- and branch organisations and research agencies. The figures are sometimes combined with ratios of private/corporate use obtained from other studies. This method is applied for a very limited number of services.

(4) Extrapolations and models

Table 5.5 below presents a more detailed picture of column (4) of table 5.4.

Table 5.5 Extrapolations and models 2015, details

	Benchm. Extrap.	Comm. Flow method	CFC (PIM)	Stratifica-tion method	FISIM	Other extrap & models	Total extrap & models
							(4)
	million euro						
Household final consumption expenditure	0	54180	0	59621	0	26469	140270

Three kinds of extrapolations and models are used (see also section 5.8.3.4).

- The commodity-flow method is used to estimate household consumption of services in cases were no sources are available for household final consumption expenditure. This indirect approach determines consumption as a residual item in the total sales breakdown of the goods and services concerned.
- Estimates of final consumption expenditure on imputed and actual dwelling services resulting from the stratification method have been classified under “Stratification Method”.
- Other extrapolations and models cover all kind of estimates based on calculation (price x quantity) of data from surveys, censuses and administrative sources.

(8) Conceptual adjustments

Table 5.6 below gives more detailed information on column (8) of the process table.

Table 5.6 Conceptual adjustments 2015, details

	Allocation of FISIM and Spreads	Other conceptual	Total conceptual
			(8)
	million euro		
Household final consumption expenditure	-262	26695	26433

Consumption of households of FISIM and Spreads is estimated within the FISIM/Spreads calculations which are described in section 3.18 of this inventory.

The item 'other conceptual' refers to theoretical VAT calculated by type of goods or services. See section 5.8.3.5 for further explanation. Consumption of non-residents in the Netherlands and consumption of residents abroad are also recorded in this column.

(9) Exhaustiveness

Table 5.7 provides a more detailed presentation of the estimates for exhaustiveness.

Table 5.7 Estimates for exhaustiveness 2015, details

	N1	N2	N3	N4	N5	N6	N7	N8	Total exhaust
									(9)
	million euro								
Household final consumption expenditure	1823	752	196	0	0	279	5027	0	8077

In column N1 final consumption expenditures related to underground activities are recorded (a.o. hairdressers, cleaning of houses and buildings and landscaping); see sections 7.2.3.1 and 7.3.

Column N2 reflects household final consumption expenditure that is related to illegal transactions. In case of household final consumption this concerns estimates for drugs, smuggling of tobacco, fencing, illegal copying, illegal gambling and prostitution. The estimates for illegal transactions are further explained in sections 7.2.3.2 and 7.3 of this inventory.

In Column N3 additional household consumption of energy connected with own account energy production (solar energy), consumption of own account crop production from kitchen gardening and the renting of dwellings (Airbnb-type activities) is recorded; see sections 7.2.3.3 and 7.3.

In column N6 cost fraud is recorded. The estimation is explained in more detail in section 7.2.3.4. The elimination of the VAT gap is also recorded here; see sections 7.2.3.5 and 7.3.

Household final consumption expenditure related to income in kind is recorded in column N7.

Table 5.8 Household final consumption expenditure by COICOP, 2015

	Basis for national accounts figures					
	Surv and Censuses	Admin records	Combined data	Extrapol + models	Other	Total
	(1)	(2)	(3)	(4)	(5)	(6)
	million euro					
Household final consumption expenditure by COICOP (1 digit)						
01 - Food and non-alcoholic beverages	32658	325	0	0	0	32983
02 - Alcoholic beverages, tobacco and narcotics	6981	0	0	0	0	6981
03 - Clothing and footwear	13471	0	0	234	0	13705
04 - Housing, water, electricity, gas and other fuels	1125	1112	0	70203	0	72440
05 - Furnishings, household equipment and routine household maintenance	12533	11	0	981	0	13525
06 - Health	2098	7767	0	258	0	10123
07 - Transport	4862	5290	0	18403	0	28555
08 - Communication	7357	0	411	33	0	7801
09 - Recreation and culture	15345	1003	67	10220	0	26635
10 - Education	416	0	0	1545	0	1961
11 - Restaurants and hotels	3925	0	0	16191	0	20116
12 - Miscellaneous goods and services	9969	4290	0	22202	0	36461
Transition to national concept	0	0	0	0	0	0
Household final consumption expenditure Total	110740	19798	478	140270	0	271286

	basis (total)	Adjustments				Final estimate
		Data val.	Concept.	Exhaust.	Balancing	
	(6)	(7)	(8)	(9)	(10)	(11)
	million euro					
Household final consumption expenditure by COICOP (1 digit)						
01 - Food and non-alcoholic beverages	32983	0	1977	-5	-74	34881
02 - Alcoholic beverages, tobacco and narcotics	6981	0	1461	1623	-25	10040
03 - Clothing and footwear	13705	0	2863	-58	2	16512
04 - Housing, water, electricity, gas and other fuels	72440	0	2151	-217	-159	74215
05 - Furnishings, household equipment and routine household maintenance	13525	0	2670	704	-561	16338
06 - Health	10123	0	492	-50	-21	10544
07 - Transport	28555	0	4817	2962	101	36435
08 - Communication	7801	0	1528	64	-103	9290
09 - Recreation and culture	26635	0	3146	547	110	30438
10 - Education	1961	0	60	-1	107	2127
11 - Restaurants and hotels	20116	0	1792	1754	-126	23536
12 - Miscellaneous goods and services	36461	0	1701	702	325	39189
Transition to national concept	0	0	1775	52	0	1827
Household final consumption expenditure Total	271286	0	26433	8077	-424	305372

(10) Balancing adjustments

The adjustments in this column result from balancing of the supply and use tables.

Table 5.8 shows the process table by COICOP items. It must be emphasised that HFCE data are compiled according to the good and services (CPA-type) classification in the Dutch SUT– and not according to COICOP. Table 5.8 is constructed after balancing of the SUT.

5.8.2 Main data sources and their conversion to national accounts results

The majority of household final consumption expenditure is accounted for by household spending on goods and services, for which estimates essentially are based on the following two source statistics produced by Statistics Netherlands:

- the household budget survey (HBS);
- retail trade statistics (RTS).

Both data sources are used in close combination.

The HBS collects expenditure data from a sample of Dutch households (about 15.000 households in 2015) during a calendar year.

A large part of final consumption expenditure of households is linked to turnover of retail trade. Consumers will purchase most consumer items at retail outlets which, in turn, supply virtually all traded goods to consumers. The RTS provide turnover data by outlet type and commodity.

Nevertheless, final consumption expenditure of households is not fully covered by the above-mentioned sources due to differences in definitions and populations covered, compared to the national accounts.

Difference between spending and final consumption expenditure

Final consumption expenditure pursuant to the ESA 2010 definitions shows a significant correspondence with perceived consumer spending and thus with the above-mentioned sources. Nevertheless, this equivalence does not hold for certain goods and services. The following four types of transactions ask for additional estimates:

- According to the national accounts the own-account dwelling services produced by owner-occupiers of dwellings must be added to consumption. This consumption item represents a fictitious rent value based on the price of comparable rented accommodation.
- Goods and services not directly paid for by the user but covered, for example, by insurance must be included as well. In case of insurance households pay premiums but do not actually pay the real costs of e.g. the insured repair of car damage;
- Only goods and services initially acquired by households in the reporting year are classified as final consumption expenditure. The purchase and sale of existing goods within the households sector cancel out and thus have no impact on household consumption at macro level, even though such purchases entail consumer expenditure. Exceptions include transactions involving commercial intermediation, since the trade margins generated must be classified as consumption. If, on balance, the household sector purchases existing goods from another sector, the result is treated as consumption. Relevant products are imports of all sorts of second hand goods and second-hand leased vehicles originating from non-financial corporations;
- Households may conceive payments to (sports) clubs and associations as consumption expenditure, whereas according to ESA 2010 such transactions must be recorded as income transfers, mostly to NPISH.
- Services provided by financial institutions to households are only partly charged explicitly. So called FISIM (see section 3.18) represents also a remuneration for the services provided by financial institutions to households.

Coverage of HBS

The HBS covers only spending by regular households. This means that the HBS does not fully cover household spending in conformity with national accounts. Missing parts are in particular:

- Spending of persons living permanently in institutions who have little or no autonomy of action or decision in economic matters (e.g. long-term patients in hospitals, prisoners serving long sentences, old persons living permanently in retirement, see ESA 2.119). In the Netherlands there are more than 245,000 residents living in institutions. The majority of these individuals live in old peoples and nursing homes. They are not registered under

'common' but under *institutional households.* The latter are not covered in the HBS sample, though purchases in retail trade are included in the RTS turnover figures;
- Spending by non-resident tourists and business visitors in the Netherlands is classified as domestic private consumption expenditure. Similarly this is not included in the HBS but, where relevant, is covered by RTS figures.

5.8.3 Detailed calculations by COICOP items

In this section the calculations made for the different sources are explained in more detail. In most cases this is not done using COICOP items, since the goods and services distinguished in the Dutch NA are based on the CPA classification and not on the COICOP classification. Transformation of HFCE into COICOP items is done after the SUT have been finished.

5.8.3.1 Detailed calculations based on surveys and censuses

The estimated components of household final consumption requires four different methods which are explained in this section.

A. Combining RTS and HBS

RTS and HBS are the main data sources for autonomous estimates of consumption of households. Both having specific advantages and disadvantages.

RTS may not fully cover all expenditure on a particular product in retail trade. For example direct imports via internet and retail trade as an ancillary activity in other industries are not covered in RTS. On the other hand RTS-turnover also includes sales to businesses (small-scale purchases) which must be assigned to intermediate consumption.

As the HBS sample is relatively small, the results are subject to a substantial margin of uncertainty. The HBS is also inevitably affected by under-reporting of certain items such as smoking, drinking, etc. because of the tendency to provide socially acceptable responses. Lastly, HBS sample does neither include residents living in institutional and care-homes nor non-residents' purchases in the Netherlands.

Consequently, neither of the two data sources is fully adequate for estimating household consumption expenditure on goods on its own. However, by combining data from the two sources an adequate level estimate of consumption expenditure can be made as the HBS respondents report not only their purchases, but also the sales channels by which they spend their money. Thus, HBS yields information on the market shares of the various sales channels (e.g. supermarkets, specialised shops, etc.) by type of good. By combining the HBS market share of retail trade sales channels with turnover of the corresponding RTS, total expenditure on particular goods can be estimated.

This estimation procedure, based on combining RTS and HBS information, has the following steps:

- Step 1. At 4/5 digit NACE-level turnover as reported in RTS is adjusted for sales to 'institutional' residents, non-residents and businesses (for the calculation of these figures see below). These adjustments are carried out at the level of detail of sold products available in the RTS. The observed product aggregates vary per NACE-class.

Example for the product aggregate 'Potatoes, Vegetables and Fruit' (PVF).

Step 1: Calculation of adjused RTS turnover for supermarkets (most reliable purchase channel for PVF)

Total RTS supermarket turnover of PVF		2768
Of which		
Residents living in institutions (1)	150	
Non-residents in NL (1)	12	
Business purchases	3 +	
	165 −	
Total adjusted turnover		**2603 (A)**

Step 2: Calculation of market share of supermarkets using HBS data:

Purchasing channel	Good	Value
Supermarket	Apples	10
	Oranges	12
	Spinach	8
	Potatoes	114
	Etc.	156
Supermarket	Total PVF	300
Other purchasing channels	Total PVF	100

Market share of supermarkets: 300/(300+100)= 0,75 (B)

Step 3: Grossing up the figures and adding the values for residents living in institutions and non-residents again:

Consumption of households, raised: (A)/(B)	3471
Residents living in institutions (2)	185
Non-residents in NL (2)	18
Total final expenditure on PVF	**3674**

(1) - Purchases of residents living in institutions and non residents in supermarkets are substracted

(2) - Total purchases of residents living in institutions and non-residents in all types of outlets are added.

- Step 2. The market share of sales channels is calculated using HBS information. To get comparable figures, the VAT included in the HBS data has to be removed first, since RTS data are exclusive of VAT.
- Step 3. For the estimation of consumption of households the sales channel with the largest market share is generally judged as being most reliable. The adjusted turnover of the corresponding RTS for the concerning product aggregate is divided by that market share. Subsequently estimates for consumption by residents living in institutional households and non-residents are added. The result is an exhaustive estimate for consumption households for the concerning product aggregate.
- Step 4. The resulting estimate of step 3 is translated to the product classification of the SUT.
- Step 5. In a final step VAT is calculated by applying the VAT-rates to the transactions at product level in the SUT.

A simple numerical example for the steps 1-3 clarifies the estimation procedure:

Calculation of the adjustment for sales to institutional households, non-residents and businesses (step 1):

- *Residents living in Institutions*: In addition to regular households, the Dutch population includes residents living in institutions (245,000 people in 2015; Statistics Netherlands, population statistics). The total expenditure of this population and the breakdown by goods categories is based on the outcome published in Statistics Netherlands' Social Accounting Matrix (SAM) for 2010. In the SAM household consumption is broken down by type of household, among which residents living in institutions. Because RTS figures had to be adjusted, only expenditures on goods were selected. The 2010 figures from the SAM have been extrapolated to the year 2015 using the development of the size of the institutional populations and the price development.

- *Non-residents.* Expenses of tourists and business visitors is based on information from the Overnight accommodation statistics (Statistics Netherlands) and information from NBTC ("Nederlands Bureau voor Toerisme en Congressen"; see section 5.15.3 for more details on the estimation procedure).
- *Retail trade sales to businesses*. Not all of the sales of retail trade represent consumption of households. A small part of sales may concern business expenses to be recorded as intermediate consumption. A separate estimate of retail trade sales to companies contains three parts:
    - Incidental expenses made for employees (individual or collective) and small expenses that are part of the intermediate consumption of businesses. An example of the first type is flowers bought as a present for a staff member or drinks and snacks for a business party (1a). An example of the second type is the purchase of office needs like pencils, printer cartridges etc. (1b).
    - 1a. This type of expenses may exist in all sorts of companies. The estimation is based on the number of people employed. Both individual expenses (flowers, presents) as collective expenses (company party, etc.) are assumed to amount to 22 euros per employee.
    - 1b. These expenses are generally small amounts often paid in cash. It is assumed that these types of expenditures are made by companies in all NACE-classes, but only by the smallest companies with less than 30 employees. Business survey information is used on the amount spent on "other operating expenses" (i.e. expenses that do not belong to the direct costs for production activities).
    - Purchases by small unincorporated enterprises used for production. This consists of two parts:
    - 2a. Retail purchases by small enterprises in construction, manufacturing and gardening to be used directly in production. A percentage of intermediate consumption of small companies (max. 10 employees) is assumed to be purchased in retail. This percentage may vary by the size of the company involved (number of persons):

Number of employed persons	Percentage of:	
	input of base materials	other inputs
0	25	25
1	20	20
2	10	20
3-4	5	10
5-9	5	10

    - 2b. Purchases of goods bought in retail by owner-occupiers of dwellings linked to the output of imputed rental services must be reclassified from household consumption to intermediate consumption.
    - Purchases of goods for intermediate consumption of hidden economic activities (3a) and missing activities estimates (3b) are based on results from measuring the hidden economy as described in section 7.2.3.
    - 3a. If (part of) turnover is not reported to the tax authorities, intermediate consumption should be in line with this information. In other words, turnover and associated intermediate consumption will stay outside the administration of these operations. These intermediate goods may be obtained from retail trade.

- 3b. According to ESA growing of crops in private gardens and own account building of dwellings by households must be added to output. The required intermediate inputs may be purchased in retail shops.
- All the above mentioned examples of retail turnover to be associated with intermediate consumption are classified accordingly in the SUT.

Table 5.9 Overview of retail sales not belonging to household consumption

1.a	Expenses for employees	382
1.b	Small incidental expenses not belonging to the direct inpu	27
2.a/b	Estimates for small companies in manufacturing, construction and gardening and owner occupied dwellings	1561
3.a/b	Estimates for black economy/missing production activitie	193
		2163

B. Grossing up HBS

The method described above is restricted to transactions in goods. For a limited number of services estimates are obtained from grossed up HBS data. However, when using the budget survey as the main independent source supplementary estimates for consumption by residents living in institutions and non-resident tourists are needed, see section 5.15.3.

The procedure is as follows:

- Budget survey articles are coded in relation to the national accounts product classification (see section 9.3 for the link between HBS and SUT-codes).
- Average household expenditure per service category is grossed up to national totals on the basis of multiplication by the total number of households in the Netherlands.
- Estimates for residents living in institutions and foreign visitors are added.

The value of this estimate is shown in the table below:

Table 5.10 Services based on HBS

Service consumption by hh based on HBS	20521
Missing in HBS:	
Residents in institutions	215
Foreign visitors	246
	20982

C. Use of surveys on financial services

For pensions and life-insurance services, consumption is almost equivalent to domestic output, apart from small amounts of imports and exports. The production of pensions and life-insurance services is estimated using data collected by the Dutch Central Bank (DNB); exports and imports are estimated using information from respectively DNB and international trade in services. (see section 3.18). The remainder is household final consumption expenditure of these services.

5.8.3.2 Detailed calculations based on administrative records

Various branch organisations compile annual data on the level of products or product aggregates, supported by the necessary background information. Members of these organisations are compulsory to deliver data. Examples include household expenditure on private cars and health care.

Private cars

This category covers expenditure on both new and second-hand cars. Annual figures on new cars are based on information from the RAI (Dutch branch organisation for automobiles, motorcycles and bicycles). The results can be checked on plausibility using received taxes on passenger cars and motorcycles on private cars and motor cycles (BPM). Second hand vehicles can be acquired from private stocks or through terminated lease contracts. In the former case, only trade margins are recorded, while counter-entry disinvestment applies to formerly leased vehicles.

Health care

Health care consumption includes expenditure on behalf of clients by health insurance companies. These expenditures concern own-risk contributions and own-account contributions. The annual figures are based on information from health insurance companies.

5.8.3.3 Detailed calculations based on combined data

Data on the consumption of households of some services is not directly available. Combining data from different sources can be useful in these cases. An example is the estimate of the household consumption of postal and parcel post services. For this estimate information from press releases and a report from ACM (Autoriteit Consument en Markt - Dutch Authority for Consumers and Markets) were used, combined with an estimate of the average contribution of households in the postal and delivery costs.

5.8.3.4 Detailed calculations based on extrapolations and models

The commodity-flow method

This indirect approach involves the determination of consumption as a residual item in the total sales breakdown of the services concerned. In this method firstly the supply of a product, consisting of domestic output and imports is estimated. Intermediate consumption and exports are subsequently deducted from total supply with the remainder being identified as household consumption. Among others, this method is applied for the estimation of final consumption expenditure of restaurant services and government services.

Stratification method

The consumption of dwelling services by owner occupiers of dwellings equals the value of production of these services. The estimation of the value of production is described in section 3.19.

Other extrapolations & models

This column covers all kinds of estimates based on calculation (price x quantity) of data from surveys, censuses and administrative sources. Some examples are:

- Consumption of households of motor vehicle fuel is based on statistics on private-car ownership and use, which contain information on average car mileage by type of fuel, average fuel consumption of cars by type of fuel. Average prices by type of fuel are available from price statistics.
- Drivers instructions: Number of exams taken, multiplied by the average number of driving lessons and the average price for a lesson;
- School and college fees: number of students by type of education multiplied by school or college fee (average fee of two years, because the school year does not coincide with the calendar year).

5.8.3.5 Detailed calculations based on other conceptual adjustments

This column covers the Value Added Taxes (VAT) paid on the purchases by households. Household final consumption expenditure is estimated at the level of 336 product groups. For each product group a weighted average VAT-rate was calculated applying the corresponding VAT-rates of the individual commodities: zero-tariff, low-tariff (6%), normal-tariff (21%). The sum of all product level VAT estimates equals the total VAT paid by households.

Consumption of non-residents in the Netherlands and consumption of residents abroad are also recorded in this column. The estimation of these figures is described in more detail in section 5.15.3.

5.9 NPISH final consumption expenditure

The consumption of non-profit institutions serving households (NPISH) equals by definition output minus market sales of these institutions. Output follows the sum of total costs, including wages and salaries and consumption of fixed capital.

(1) Surveys and census / (3) Combined data

NPISH consumption estimates are fully based on the commodity-flow method. NPISH are non-market producers, which implies that NPISH consumption equals by convention NPISH non-market output. NPISH output is found in the following NACE Rev. 2 sections and divisions (between brackets the sections of chapter 3 were the estimation of the production value of these activities can be found):

J59	Motion picture, video and television program production, sound recording and music publishing activities	(3.17)
Q88	Social work activities	(3.24.2)
R90/91	Creative, arts and entertainment activities	(3.25.1)
R93	Sports, amusement and recreational activities	(3.25.4)
R94	Activities of membership organizations	(3.26.1)

Market sales by NPISH are estimated using annual reports and all kind of other external information available.

Table 5.11 Process table of NPISH final consumption expenditure, 2015

	Basis for national accounts figures					
	Surv and Censuses	Admin records	Combined data	Extrapol + models	Other	Total
	(1)	(2)	(3)	(4)	(5)	(6)
	million euro					
NPISH final consumption expenditure	606	0	4880	0	0	5486

	Basis (Total)	Adjustments				Final estimate
		Data val.	Concept.	Exhaust.	Balancing	
	(6)	(7)	(8)	(9)	(10)	(11)
	million euro					
NPISH final consumption expenditure	5486	0	0	0	-42	5444

Table 5.12 shows the calculation of output and final consumption expenditure of NPISH.

Table 5.12 Output and final consumption expenditure of NPISH

+	P.2 - Intermediate consumption	3617	Table 3.0.2
+	D.1 - Compensation of employees	2414	
+	P.51c - Consumption of fixed capital	210	
+	D.29 - Other taxes on production	30	
-	D.39 Other subsidies on production	0	
+	B2.n - Net operating surplus	0	
=	**P.1 - Output**	**6271**	Table 3.0.1
-	Receipts from sales of products	801	
-	Own-account capital formation	26	
+	D.632 - Social transfers in kind	0	
=	**P.3 - Final consumption expenditure**	**5444**	Table 5.11

The output of NPISH is based on either surveys and censuses (NPISH in NACE J59) or combined data (all other NPISH).

Employee and professional organisations and social bodies such as sports associations and religious and political organisations account for more than 65 per cent of NPISH final consumption expenditure.

(10) Balancing adjustments

The adjustments in this column are the result the balancing of the supply and use table. Balancing adjustments in intermediate consumption lead to balancing adjustments in the consumption of NPISHs.

5.10 Government final consumption expenditure

5.10.1 Summary and process table

Table 5.13 Process table of general government final consumption expenditure, 2015

	Basis for national accounts figures					
	Surv and Censuses	Admin records	Combined data	Extrapol + models	Other	Total
	(1)	(2)	(3)	(4)	(5)	(6)
	million euros					
General government final cons. Expenditure	0	146958	0	29133	0	176091

	Basis (Total)	Adjustments				Final estimate
		Data val.	Concept.	Exhaust.	Balancing	
	(6)	(7)	(8)	(9)	(10)	(11)
	million euros					
General government final cons. Expenditure	176091	0	-3737	0	0	172354

General remarks

The delineation of the general government sector is described in detail in the EDP inventory. Briefly, the delineation starts with an assessment of government control. If government control for an entity has been concluded, it is analysed whether the entity is a market producer based on the quantitative and qualitative criteria mentioned in the ESA. The quantitative test (50%-rule) is checked for three consecutive years. Entities are analysed on an individual basis except for entities which are part of a group of units bearing the same features, e.g. when specific acts and regulations apply to this group.

General government consumption broken down into several subsectors of general government is shown in table 5.14

Table 5.14 Consumption of general government, 2015

	Production	Consumption				
		Total	Collective	Individual		
				Total	Market	Non-market
General Government	125.175	172.354	55.819	116.535	70.900	45.635
Central Government	47.125	42.511	33.012	9.499	6.041	3.458
State	26.747	27.687	21.453	6.234	5.223	1.011
Universities	8.020	3.814	2.484	1.330	236	1.094
NPIs central	12.358	11.010	9.075	1.935	582	1.353
Local Government	73.652	69.906	22.808	47.098	9.304	37.794
Municipalities	28.877	30.370	13.479	16.891	8.658	8.233
Local Intergovernmental Organizations	7.170	5.789	2.513	3.276	646	2.630
Provinces	2.563	2.317	2.202	115	0	115
Public Water Boards	2.546	2.394	2.394	0	0	0
Local Educational Institutions	27.037	25.019	29	24.990	0	24.990
NPIs local	5.459	4.017	2.191	1.826	0	1.826
Social Security Funds	4.398	59.937	-1	59.938	55.555	4.383

(2) Administrative records

General government final consumption is taken essentially from the same sources as described for NACE O 'Public administration and defence; compulsory social insurance' and for the subsidized educational institutions in NACE P 'Education' (see sections 3.22 and 3.23):

- The State: ministries, Animal Health Fund, BES Fund, Infrastructure Fund, Municipalities Fund, Provinces Fund, VAT Compensation Fund and government agencies;
- Public corporate organisations;
- Universities;
- Municipalities;
- Provinces;
- Public water boards;
- Local intergovernmental organisations;
- Schools;
- A great variety of non-profit institutions and organisations (NPIs) such as Statistics Netherlands (CBS).
- Social security funds (Health Care Insurance Board (CVZ), Institute for employee benefit schemes (UWV), Social Insurance Bank (SVB), Central administration office special medical costs (CAK), and National Health Care Institute (ZIN)).

In addition, non-profit institutions and organisations controlled by government and not involved in market production that are classified in industries other than O and P are included.

General government consumption consists of two components: consumption of general government non-market production (P.13 – P.131) and social transfers in kind. The former is calculated as the sum of productions costs minus own account investments and general government sales. To this purpose, production costs and general government sales are extracted from above-mentioned source data. Own account investments is mainly estimated based on assumptions.

Social transfers in kind - market production purchased by general government comprises of:

- household reimbursements for the purchase of goods or services from market producers;
- payment to market producers for the supply of household goods and services.

Social benefits in kind are covered by a large number of different schemes and are mainly provided by the State, social security funds (especially health schemes) and municipalities. For the State and social security funds, social benefits can be easily discerned in the source data although the distinction between benefits in kind and in cash is sometimes difficult to make. For municipalities, social benefits can be found in specific functions, but for some schemes additional information is needed. Note that in general it is difficult to distinguish between subsidies (D.3) and social transfers in kind - market production purchased by general government (D.632). Payments by general government to entities that provide goods and services related to social risks and needs, are in general recorded as social transfers in kind - market production purchased by general government (D.632).

(4) Extrapolation and Models

Consumption of fixed capital formation (22.2 billion euros) is estimated by applying the PIM to the gross fixed capital formation data mainly provided by government entities.

For some non-profit institutions and organisations (NPIs) belonging to general government, no direct source data for the year 2015 were used. Estimates are mainly based on extrapolated data on grants provided by the State and on data over the reporting year 2014. The result of this extrapolation amounts to 5.5 billion euros. Also part of the local intergovernmental institutions is not covered by direct sources due to non-response. They are grossed up by using data of the responding institutions. Extrapolations for this subsector amount to 1.5 billion euros.

(8) Conceptual

FISIM (1.5 billion euros) is based on source data on stocks of deposits assets held by government entities at financial intermediaries and stocks of loans liabilities provided by financial intermediaries to government entities.

Purchase of software is included under conceptual adjustments. In national accounts it should be recorded as gross fixed capital formation, whereas it is (partially) recorded as costs in the source data. Hence, an adjustment to the source data has to be made which is based on investment data on software gross fixed capital formation covering other industries (see section 5.11.6 This reduces government consumption by 3.2 billion euros. Gross fixed capital formation related to R&D reduces government consumption by an additional 3.6 billion euros.

5.11 Acquisitions less disposals of fixed assets

5.11.1 Overview

Fixed assets are produced assets that are used for more than one year in a production process. In the Netherlands all fixed assets within the asset boundary, as defined in ESA 2010, are covered with the exception of separate estimates for land improvements (AN.1123). Major improvements to land are included in the GFCF questionnaire under civil engineering works AN.1122 Other structures. As such, it is not possible to separate the value from the total AN.1122 Other structures.

Data for acquisition of non-financial fixed assets are largely collected by means of the investment survey of Statistics Netherlands. This survey entails the purchased assets and assets that are produced on own-account. Data are collected per type of asset and industry. The investment survey is based on a sample of ca. 60,000 kind of activity units which is stratified according to the NACE Rev. 2 and size classes based on the statistical business register (SBR). The sample includes units from all size classes. The sample size varies strongly per branch of industry, as the number of companies also varies per branch. Units with 20 or more employees (about 3 per cent of the population and 85 per cent of total investment) are all included in the survey. The adjustment for non-response and weighting to total population is done with a GFCF/employee ratio per strata. A stratum consists of a combination of a 3-digit NACE section and two size classes (less than 20 employees and 20 and more employees).

In the investment survey the ownership criterion is strictly applied. The survey does not cover all NACE Rev. 2 sections. It is confined to NACE Rev.2 sections:

- 01.6, Agricultural service activities
- 06-33, Mining and quarrying and manufacturing
- 35-39, Electricity, gas and air-conditioning supply, and water supply sewerage, waste management and remediation activities.
- 41-43, Construction
- 45-47, Wholesale and retail trade; repair of motor vehicles and motorcycles
- 49-53, Transportation and storage
- 55-56, Accommodation and food service activities
- 58-63, Information and communication
- 68-75 (excl. 70.1), Real estate activities, and professional scientific and technical activities (excl. activities of head offices)
- 77-82, Administrative and support service activities
- 95-96, Repair of computers and personal and household goods, and other personal service activities.

The following industries are not covered by the investment survey (NACE Rev.2 sections):

- 01-03 (excl. 01.6), Agriculture forestry and fishing (excl. 01.6, Agricultural service activities)
- 64-66, Financial and insurance services
- 70.1, Activities of head offices
- 84, Public administration and defence; compulsory social security
- 85, Education
- 86-88, Human health and social work activities
- 90-93, Arts, entertainment and recreation
- 94, Activities of membership organisations

Gross fixed capital formation (GFCF) for these industries is estimated using other sources and methods.

The estimation of GFCF in the agricultural sector (NACE Rev.2 section 01-03) is based on data provided by the Agricultural Economic Institution (LEI). The LEI provides a detailed balance sheet with information on GFCF for almost all tangible fixed assets, cultivated biological resources and total intangible assets.

For GFCF in the financial services industry (NACE Rev. 2 section 64-66) data are obtained from information collected by the Dutch Central Bank (DNB) and annual reports. The surveys of DNB consist of yearly or quarterly key figures on monetary financial institutions, pension

funds, insurance companies and investment funds that are supervised by the Dutch Central bank. DNB also provides data on other financial corporations (S.124-S.127), on special purpose entities, and on itself.

For GFCF in NACE Rev. 2 section 70.1 (activities of head offices) a new benchmark level is estimated for the revision of 2015. The estimation is based on SBS data and contains information on investment by type of asset which can be directly used for estimating GFCF. However, data on from size class 0 up to 5 are incomplete. Missing entities in these classes are estimated using consumption of fixed capital from the Statistics of Business Finance which provide information on business level. Since no other data are available, the assumption is made that entities strive to maintain production capacity and hence GFCF equals consumption of fixed capital.

Data on GFCF in government and subsidized education (NACE Rev.2 section 84-85) is obtained from government statistics. Estimates are based on financial administrations and public documents (e.g. budgets and annual reports). Two NACE industries rely fully on data from the government accounts. These are the NACE Rev. 2 sections 84 and 85.2-85.4 (general government and subsidized education). A more detailed description of the source data is given in section 3.21 Public administration and defence; compulsory social insurance (NACE Rev. 2 Section O), and 3.22 Education (NACE Rev. 2 Section P).

For NACE Rev. 2 section 85.5 and 85.6 (private education) a benchmark level for 2015 has been estimated using labour data. This is done by assuming a relationship between the number of full time equivalent and GFCF. Labour data are available at 4-digit level of NACE Rev. 2. The applied method makes a distinction between the types of assets that are allocated to the various classes in the section private education. For instance, GFCF in cars per FTE is higher for NACE 85.53 driving school activities compared to other classes in private education. The estimation method takes into account the length of the service life of assets which are based on those applied in the PIM.

GFCF in the industry health care (NACE Rev.2 section 86-88) has been benchmarked in 2015 using various data sources. Firstly, the main source comprises of annual reports of enterprises. Most of these stem from enterprises which are financed or partly financed through the Health care insurance Act, the Long-term care Act and/or the Youth Act. These include enterprises with main activity hospital care, residential mental health care, care for the disabled, nursing home care, home care, residential care for other persons and youth care. The information contains financial data for health care industry, including balance sheets with the investments per health care institution type. In addition data on tax declarations of enterprises are used to estimate other health care organizations for which no annual reports are available. These include organizations related to welfare work and social work, and health supporting agencies like medical laboratories and occupational health and safety agencies. Lastly, health associations, which are exempted from paying taxes, are estimated by using a mark-up based on operating result. The mark-up is computed by the ratio between the total operating result of the industry health care and the operating result of the institutions that are observed by the annual reports and the tax data.

For NACE Rev. 2 sections 90-94 (arts, entertainment, recreation, and activities of membership organisations) a new benchmark level for 2015 is estimated. The estimation method relies on two main data sources: the statistics of business finance and the number of employed from the business register. For non-financial corporations (S.11) the statistics of business finance (SFO) is used while the estimation of non-S.11 corporations is based on data from the business

register. The statistics of business finance only contain information on GFCF of corporations with balance sheets exceeding 40 million euros. Regarding corporations with a less sizable balance sheet only end-year balances are available. To estimate gross fixed capital formation, the ratio of investment to end-year balances of the total economy has been applied. For the estimation of non-S.11 corporations a relationship is assumed between the number of full time equivalent and GFCF. This relationship is based on expert guesses since source data is unavailable. The number of fte is computed using the number of employed from the business register and the assumption that the ratio of fte/employed persons is similar to the S11 units. Given the estimated number of fte, for each sub-industry the various asset types investments per single fte job are estimated. Here some diversification on investment patterns is applied, depending on type of industry. For instance, investment in buildings is limited to industries that are likely to own buildings such as theatres, event halls, libraries and museums. In contrast, for the industry of performing arts the assumption is made that investment in buildings are insignificant as it largely consists of self-employed workers.

For real estate activities (NACE Rev. 2 section 68) a large part of the GFCF (95 per cent) is determined by the commodity flow method of the construction related assets (AN.1121 Buildings and AN.111 Dwellings). For a few other assets investment survey results are used. The commodity flow method ensures that GFCF includes the following items that are not observed in the investment survey: owner occupied dwellings of households, buildings and dwelling intended for rental owned by households and GFCF resulting from unreported production. For the latter, construction related production is explicitly adjusted.

In the transport sector (NACE Rev.2 sections 49-53) in a number cases reference is made to annual reports. This is particularly the case for large enterprises like the Dutch railways (NACE Rev.2 section 49.12), and the state rail infrastructure (section 52.12). Sometimes this leads to adjustments in data of the investment survey or structural business statistics (SBS).

Besides a number of industries, several types of assets are not covered by the investment survey. These assets are estimated using other sources. The assets concerned are:

- Weapon systems
- Airplanes
- Software
- R&D

With the implementation of ESA 2010 weapon systems are recognized as fixed assets. Data on weapon systems (AN. 114) are provided on a quarterly basis by the Ministry of Defence. Statistics Netherlands distinguishes 5 types of assets in weapon systems. These are electronic or telecommunication equipment; tanks, weapons and munitions; transport equipment; warships; and warplanes. A more detailed description of the source data is given in section 3.21 Public administration and defence; compulsory social insurance.

Foreign trade statistics are used for estimating GFCF in airplanes, airplane parts, and jet engines. Furthermore, foreign trade statistics are used to estimate the gross fixed capital formation in second-hand trucks and trailers from abroad.

The estimates of GFCF in intellectual property products are based on other data sources than the investment survey. For example GFCF in research and development (R&D) is estimated by means of data from the Frascati based R&D survey and GFCF in software is estimated using the ICT survey and the commodity-flow method.

The Frascati based R&D survey covers enterprises with 10 or more employed persons. Every year a stratified sample from the units in the target population (based on the Statistical Business

Register) are surveyed for statistics on R&D. The survey is conducted via the internet. Data are collected from approximately 6,500 units. The estimate for the target population is obtained by using a grossing up factor (stratum population / response – N/n) for business units in each stratum (SIC 2-digit /company size combination). For enterprises with less than 10 persons employed, Statistics Netherlands uses administrative data. The survey and administrative data are then integrated to form the R&D statistics covering all enterprises in the Netherlands.

The resulting R&D statistics contain information on the R&D-related compensation of employees, other operation costs (excluding consumption of fixed assets) and capital expenditure that represent the inputs of R&D-activities (buildings, machinery etc.). Gross expenditure on research and development (GERD) according to Frascati guidelines is calculated as the sum of these expenditure categories. The R&D statistics also provide information on R&D purchases (by type of provider) and R&D sales (by type of purchaser). These sales and purchases do not include the intra-enterprise R&D (own-account R&D) produced by separate entities on behalf of affiliated producers.

The ICT expenditure survey was used to estimate own account software for the year 2015. The survey asks respondents about the number of fte's dedicated to the development and maintenance of software used for production. The survey covers the same population of units as the annual EU harmonized survey on ICT usage and e-commerce in enterprises. Therefore it includes only enterprises with 10 or more employed persons, in a limited range of NACE groups (roughly: C through N, and Q of NACE Rev.2). So an additional estimate / grossing-up for the missing NACE-classes / units under the threshold is needed. The grossing-up is based on total turnover per stratum as obtained from business surveys. Furthermore other sources and assumptions are consulted to supplement the ICT survey. For example SBS is used to estimate payments for services related to the development of custom made software. Similarly, SBS data on labour costs of IT-specialists (NACE Rev. 2 section 62) serves to estimate own-account GFCF of software. A more elaborate description of the method for estimating own-account software can be found in box 1.

Box 1 Own-account software investment

The OECD manual recommends to estimate the own-account investment on base of the number of persons working on the production of own-account software. The recommended method is as follows:

- Estimation of the labour costs based on the average wage of IT specialists.
- Adjustment for the percentage of time that the IT staff actually spends developing own-account software. The advice of the handbook is, in the absence of data, to assume that a maximum of 50% of the time is spent on the creation of own-account software. This percentage is based on a number of international researches on the activities of IT staff.
- Estimation of other costs (intermediate consumption, capital costs, and taxes / subsidies) that are associated with the production of own-account software. Data on intermediate consumption of the computer services industry (Nace 62) is advised.

(Box 1 continued)

The ICT survey explicitly asks for IT staff working on the development or maintenance of own-account software. Staff that develops third party software is explicitly excluded. The average wage costs are determined on the basis of the IT industry.

Compensation of employees per full-time equivalent in this industry is taken as proxy for the average wage of IT staff in general. From the year 2006 on an adjustment is made to the IT staff. This adjustment is the consequence of a change in the contents of the concerning question in the survey. Up to 2005 only staff working on a large maintenance was to be included, from 2006 onward staff working on all kinds of maintenance is included (and thus also small maintenance). In accordance with ESA 2010 only major maintenances should be recorded as investment, therefore an (estimated) adjustment factor of 0.84 is used.

Also an adjustment is made for non-response. In the ICT survey data are imputed in case of non-responding companies. However, if the company does not fill out all questions (partial non-response), these specific values are considered to be 0. For example if a company does not fill out the question related to IT personnel, a 0 is assigned to the number of IT professionals. Therefore, an adjustment is made based on the average share of IT staff that makes own-account software. If also the number of this IT staff is not known, the IT staff working on the development or maintenance of own-account software is estimated as a percentage of the total number of employees.

According to the OECD Handbook 50 percent is the maximum percentage to adjust the percentage of time that staff actually spends on making own-account software. There should indeed be an adjustment for the time that IT staff spends on activities other than software development, *as long as these activities have the purpose of generating other output*. However, it is expected that (in our case) such adjustment would result in an underestimation of own account GFCF. Time that is indirectly spent on the development of own-account software, such as education and even time spent on drinks and the like, should also (partly) be accounted to the time spent on own-account software development.

The employer expects that also these costs are covered by the value of the software produced. Moreover, the ICT survey explicitly asks for the part of IT staff working on own-account software development. It is therefore conceivable that firms do not include the time that is spent on all other mentioned activities. Therefore, no adjustment for the time that staff actually spends in the production of own-account software has been made.

The additional estimate for the other IT costs is based on the supply and use tables of Nace. 62. In practice the different additional estimates result in a mark-up that more or less coincides with the ratio of the production and the labour income (of the employed and self-employed).

The different additional estimates are therefore not determined separately. Labour costs are adjusted in one step to match the production value.

(Box 1 continued)

Finally, for some industries an adjustment is made based on a question in the ICT survey concerning the estimated value of the own-account software. In general, the value as reported by the respondents is too low. Many companies fill out a value of 0. The value entered by the respondents is seen as the lower limit (on industry-level) of the own-account software. If the summed values of the respondents (on industry-level) is higher than the value of the own-account software that is estimated as described above, the own-account software is set equal to the results of the ICT survey.

Acquisitions are confined to newly produced assets and import of second-hand trucks. It is assumed that sales on the domestic second-hand market occur between enterprises within the same industry on the level of classification applied in the GFCF-estimation in the national accounts with the exception of government and financial institutions. Disposals of leased company cars is represented by an adjustment item in the GFCF estimate. The service life under lease arrangements of leased cars is set to an average of approximately 4 years (50% after 3.5 years and 50% after 4.5 years of use) after the acquisition by the industry renting and leasing activities (NACE Rev. 2 section 77). After the lease arrangement the cars are assumed to be sold to households. The disposals of lease cars are recorded as a disinvestment and as household consumption (trade margins on purchases of lease cars are recorded as output of trade industry). In case existing assets are disposed and sold to non-resident units they are recorded as a disinvestment and exports of goods. The main data source for disposals is the statistics on the international trade in goods, which contains information about exported second hand assets.

GFCF as reported in the investment survey includes own-account GFCF (not separately asked in the survey). Structural business statistics (SBS) is used to identify own-account part in total GFCF. It is assumed that SBS gives a reliable total for own-account investment in the asset types other buildings and structures (AN.112g), transportation equipment (AN.1131), (AN.1139a) machinery and installations and other machinery and equipment (AN.1139b). The estimate for own-account construction of dwellings is described in section 7.3. For own-account software, research and development (R&D), and other intellectual property products additional estimates are made and added to own-account GFCF. The method to estimate own-account R&D is described in detail in annex 5.4. Own-account GFCF in mineral exploration and evaluation is determined as a balancing item (GFCF = domestic production + imports – intermediate consumption – exports). The available data sources do not give direct information on the amount of intermediate consumption of mineral exploration. It is assumed that mineral exploration executed by large companies is always intended for GFCF or export, whereas mineral exploration executed by smaller firms is subcontracting and therefore intermediate consumption.

The breakdown of own-account GFCF from the SBS into other buildings and structures (AN.112), transportation equipment (AN.1131), machinery and installations (AN.1139a), and other machinery and equipment (AN.1139b) is done by taking the previous year (balanced GFCF results) as a reference. To estimate the own-account GFCF levels per asset and per industry, the activities of corresponding industries have been considered. The (selected) associated assets are based on pre-revision information.

Before transferring GFCF-data to the supply and use tables the asset types have to be reclassified to products. This breakdown is based on the balanced results of the previous year. In case of the revision non-revised 2015 results are used. The fraction of the product group of the SUT per asset type of the previous year is taken as a reference to achieve the breakdown in

the present year. From one year to another, the fractions are influenced by the balancing process in which per product group supply and use is confronted and balanced.

For non-deductible value added tax (VAT) a combination of two schemes is used. The first scheme gives per industry the part of output that is exempted from VAT. This percentage indicates what part of GFCF of the concerning industry is ultimately charged with VAT. The other scheme gives the VAT-rates by product in standard rate, low-rate or zero. Applying the rates of the corresponding year both schemes are used to produce a table with the rates per industry and per product. Subsequently, this table is applied to the GFCF estimates in order to calculate the non-deductible VAT on GFCF.

In Table 5.15 the total gross fixed capital formation in 2015 is shown by NACE Rev. 2 sections and type of asset. The data are valued at purchasers' prices including non-deductible VAT. GFCF amounts up to 164 billion euros for the total economy. Cost of transfer of ownership of dwellings and buildings are included in respectively the asset types 'Dwellings' and 'Buildings other than dwellings'. GFCF in weapon systems is included in the asset type 'Machinery and installations'. The total GFCF in weapon systems amounts 548 million euro. GFCF in weapon systems consist of warplanes (125 million euros), warships (83 million euros), transport equipment (244 million euros), tanks, weapons and munitions (46 million euros), and communications equipment (50 million euros). In table 5.15 total investments does not include the sales of existing fixed assets. Nonetheless, for readability of the text the term GFCF is used in the whole text.

The process table for sales of existing fixed assets is shown at the end of this section 5.11.1.

Table 5.16 shows the investments by asset type and sector. As can be seen in table 5.16 the household sector (S.14) is the main investor in dwellings. In table 5.15 owner occupied dwellings are included in the NACE Rev.2 section 68 (real estate activities).

In table 5.17 the process table is given for the revised 2015 estimates. The most important sources, methods and adjustments are described per heading (column). Furthermore, a description of the most important adjustments by asset (per AN code) is given.

Table 5.15 Gross fixed capital formation from production and imports by NACE sections; 2015, values in current prices in million euros

	Total	Dwellings	Buildings other than dwellings	Other structures	Costs of ownership transfer of land	Passenger cars	Other road transport equipment	Trains and trams	Ships	Aircraft	Computers	Telecommunication equipment	Machinery and installations	Other tangible fixed assets	Cultivated biological resources	Research and development	Computer software and databases	Intellectual property products
All economic activities	164037	24127	17275	17582	1410	8047	3021	401	1106	1475	4840	1128	17298	5682	355	34892	24693	705
Agriculture, forestry and fishing	4777	0	1744	40	119	29	150	0	30	0	23	9	2015	76	355	121	62	4
Mining and quarrying	2628	0	70	969	0	1	1	0	303	0	9	0	1006	14	0	3	106	146
Manufacture of food and beverages	2417	0	327	16	2	21	27	0	0	0	39	2	1341	130	0	161	351	0
Man. of textile-, leatherproducts	113	0	11	0	0	4	2	0	0	0	4	0	40	7	0	15	30	0
Man. wood en paperprod., printing	415	0	44	0	0	16	8	0	0	0	16	2	186	21	0	19	103	0
Manufacture of coke and petroleum	655	0	20	17	0	0	0	0	0	0	1	0	455	115	0	18	29	0
Manufacture of chemicals	2441	0	69	585	0	6	0	0	0	0	13	2	1319	112	0	159	176	0
Manufacture of pharmaceuticals	337	0	17	0	0	1	0	0	0	0	9	0	119	10	0	105	76	0
Man. plastics and constructionprod	560	0	32	2	2	12	6	0	0	0	11	0	328	30	0	37	100	0
Man. of basic metals and -products	1023	0	76	5	2	37	15	0	0	0	22	5	488	44	0	121	208	0
Manufacture of electronic products	1407	0	18	0	0	6	0	0	0	0	9	0	72	17	0	889	396	0
Manufacture of electric equipment	817	0	7	0	0	3	1	0	0	0	4	0	68	9	0	428	297	0
Manufacture of machinery n.e.c.	2371	0	332	1	2	16	8	0	0	0	39	2	379	40	0	1136	416	0
Transport equipment	529	0	78	1	0	3	18	0	0	0	12	0	149	20	0	152	96	0
Other manufacturing and repair	817	0	117	0	0	41	36	0	0	0	26	4	329	34	0	46	184	0
Electricity and gas supply	5605	0	96	2782	2	1	0	0	0	0	51	0	2024	52	0	41	556	0
Water supply and waste management	1283	0	87	294	2	18	89	0	0	0	11	0	402	128	0	53	199	0
Construction	2713	309	167	1	6	189	339	0	203	0	83	21	548	119	0	69	659	0
Wholesale and retail trade	8371	0	1180	9	11	678	421	0	0	0	397	98	1092	1094	0	933	2458	0
Transportation and storage	9271	0	734	1589	16	74	1231	401	556	1435	178	62	1792	268	0	99	836	0
Accommodation and food serving	907	0	277	9	2	33	16	0	0	0	28	12	135	229	0	2	164	0
Publishing, movie, radio and TV	648	0	44	0	0	5	0	0	0	0	36	24	32	26	0	30	274	177
Telecommunications	3226	0	79	1284	0	4	0	0	0	0	152	204	479	133	0	393	498	0
IT- and information services	3117	0	29	1	2	60	5	0	0	0	1257	26	56	79	0	285	1317	0
Financial institutions	4911	153	1219	0	228	45	2	0	0	0	395	53	35	94	0	555	2130	2
Renting, buying, selling real estate	29437	23573	4185	29	916	38	19	0	0	0	39	8	9	528	0	1	92	0
Management, technical consultancy	3056	0	305	15	0	168	12	0	0	0	390	43	199	300	0	391	1233	0
Research and development	649	0	102	1	0	0	0	0	0	0	28	0	98	12	0	248	160	0
Advertising, design and other	508	0	27	0	0	27	7	0	0	0	57	17	41	30	0	46	256	0
Renting and other business support	37885	0	168	3	0	6140	415	0	6	18	107	20	391	196	0	24350	6071	0
Public administration and services	16866	92	2279	9800	66	80	119	0	8	8	382	179	902	233	0	317	2401	0
Education	6234	0	1037	71	1	58	3	0	0	14	443	59	61	906	0	2857	724	0
Human health activities	3923	0	1043	19	15	120	42	0	0	0	322	98	387	263	0	509	1105	0
Care and social work	2403	0	1061	17	16	71	11	0	0	0	181	110	198	153	0	16	569	0
Culture, sports and recreation	990	0	97	18	0	11	7	0	0	0	47	59	78	68	0	10	219	376
Other service activities	727	0	97	4	0	31	11	0	0	0	19	9	45	92	0	277	142	0

Table 5.16 Gross fixed capital formation (gross) by type and by sector; 2015

	All sectors	Non-financial corporations	Financial corporations	General government	Households	NPISHs
Fixed assets from production and imports						
Total	**164037**	**101500**	**4897**	**25829**	**31627**	**185**
Dwelling	24127	4557	153	92	19325	0
Buildings other than dwellings	17270	7939	1205	3664	4446	17
Other structures	17587	6592	0	10868	125	2
Costs of ownership transfer of land	1410	516	228	67	599	0
Total transport equipment	14050	12447	47	363	1186	7
Passenger cars	8047	7198	45	130	668	6
Other road transport equipment	3021	2389	2	217	413	1
Trains and trams	401	401	0	0	0	0
Ships	1106	1002	0	8	96	0
Aircraft	1475	1458	0	8	9	0
Computers	4840	3083	395	914	436	12
Telecommunication equipment	1128	720	53	236	111	8
Machinery and installations	17298	13911	35	1190	2147	14
Other tangible fixed assets	5682	3448	94	1271	859	10
Cultivated biological resources	355	82	0	0	273	0
R&D	34892	30268	555	3647	406	16
Computer software and databases	24693	17424	2130	3517	1574	48
Intellectual property products	705	512	2	0	139	52

Table 5.17 Process table of Gross fixed capital formation by AN code, 2015

		Basis for national accounts figures						
		Survey & Censuses	Administrative records	Combined Data	Extrapolation and models	Commodity Flow Model	Other	Total
		(1)	(2)	(3)	(4)	(5)	(6)	
		million euros						
GFCF	Total	55.300	19.986	4.954	13.210	37.985	33.196	164.631
AN.111	Dwellings	0	156	0	2.640	21.453	0	24.249
AN.1121	Buildings	4.291	4.602	0	2.751	3.981	1.731	17.356
AN.1122	Other structures	5.511	11.107	0	1.591	0	37	18.246
AN.1131	Transport equipment	11.793	298	0	489	0	1.455	14.035
AN.1132	ICT-equipment	3.302	1.508	0	901	0	19	5.730
AN.1139a	Machinery and installations	14.451	512	65	788	0	1.766	17.582
AN.1139b	Other machinery and equipment*	3.163	1.253	0	1.257	0	65	5.738
AN.114	Weapon systems	0	548	0	0	0	0	548
AN.115	Cultivated biological resources	0	0	0	0	0	355	355
AN.1171	R&D	12.789	0	0	0	0	22.558	35.347
AN.1172	Mineral exploration	0	0	0	0	146	0	146
AN.1173	Software	0	0	4.889	2.236	12.405	5.210	24.740
AN.1174	Entertainment, literary or artistic originals	0	0	0	553	0	0	553
AN.1179	Other IPPs	0	2	0	4	0	0	6

		Basis (total)	Adjustments				Balancing	**Final estimate**
				Data validation	Conceptual	Exhaustive-ness		
				(7)	(8)	(9)	(10)	
		million euros						
GFCF	Total	164.631	0	12	-277	1.077	-1.406	164.037
AN.111	Dwellings	24.249	0	0	0	0	-122	24.127
AN.1121	Buildings	17.356	0	0	0	0	-81	17.275
AN.1122	Other structures	18.246	0	574	0	0	172	18.992
AN.1131	Transport equipment	14.035	0	-384	0	0	399	14.050
AN.1132	ICT-equipment	5.730	0	0	0	0	238	5.968
AN.1139a	Machinery and installations	17.582	0	0	0	914	-1.746	16.750
AN.1139b	Other machinery and equipment*	5.738	0	0	0	163	-219	5.682
AN.114	Weapon systems	548	0	0	0	0	0	548
AN.115	Cultivated biological resources	355	0	0	0	0	0	355
AN.1171	R&D	35.347	0	-178	-277	0	0	34.892
AN.1172	Mineral exploration	146	0	0	0	0	0	146
AN.1173	Software	24.740	0	0	0	0	-47	24.693
AN.1174	Entertainment, literary or artistic originals	553	0	0	0	0	0	553
AN.1179	Other IPPs	6	0	0	0	0	0	6

The N6-exhaustiveness adjustment for the VAT-GAP (122 million) is in table 5.17. recorded under the header balancing.

The process table: the columns

(1) Surveys & censuses

GFCF estimates in this column are obtained from the investment survey, the ICT survey and the Frascati based R&D survey. Some industries (NACE sections) consist of a mix of government units (S.13) and non-financial corporations units (S.11). The GFCF-estimate for S.13 units is registered in the column administrative records (2).

For R&D gross expenditure of research and development (GERD) derived from the Frascati survey is registered in this column. Adjustments of the data to revalue GERD to national accounts concepts of production are registered in the column conceptual changes (8). A comprehensive description on the GFCF estimate of R&D is given in annex 5.4.

(2) Administrative records

GFCF in this column refers to data taken from annual reports and balance sheets of banks, insurance companies and government, data from the tax authorities of taxes on the transfer of ownership of existing buildings (which are registered as gross fixed capital formation).

(3) Combined data

Column (3) Combined data largely consists of own-account GFCF in software. The main data source for the estimation of own-account software is the ICT survey which provides information on IT-staff. The estimation also uses information on labour costs and includes a mark-up for the estimation of other IT costs. A comprehensive description of the estimation method is given in box 1. Because a large part of own-account software is estimated by a combination of sources and assumptions, the estimate is placed in the column (3) Combined data.

(4) Extrapolation and models

The column Extrapolation and models consists of GFCF that is estimated by way of models or other calculation methods. The column includes industries that have been revised due to newly estimated benchmark levels such as activities of head offices, private education, health care, arts, entertainment and recreation and activities of membership organisations (respectively NACE Rev.2 section 70.1, 85.5, 86-88 and 90-94). The largest values in this column concern GFCF in AN.111 Dwellings (2640 million euros), AN.1121 Buildings (2751 million euros), AN.1122 Other structures (1591 million euros), AN.1139b Other machinery and installations (1257 million euros), AN.1131 Transport equipment (489 million euros), AN.1132 ICT-equipment (901 million euros), AN.1173 Software (2236 million euros), and AN.1174 Originals (553 million euros).

Acquisition of new assets in AN.1121 Buildings and AN.1122 Other structures are adjusted for work in progress. In accordance with ESA 2010, these activities must be registered as GFCF when the ultimate user is deemed to have taken ownership (either because it is for own use or as evidenced by contract) instead of on the moment when the assets are finished and acquired. In practice however the investments are registered when the costs occur. To adjust for this timing difference, information on work in progress is obtained from the investment survey. In the investment survey a separate question on work in progress is included, providing an opening and closing balance sheet.

(5) Commodity flow method

GFCF of some asset types is estimated using the commodity flow method. For instance, gross fixed capital formation in mineral exploration is determined as a balancing item. GFCF is equal to the domestic output (from SBS) + import of services (trade statistics) - intermediate consumption - exports of services (trade statistics).

The largest estimate of gross fixed capital formation mentioned under (5) Commodity flow is that of AN.111 Dwellings (21590 million euros). This mainly concerns owner occupied dwellings. The estimate is based on the total production of dwellings provided by statistics on construction (SBS). Other costs such as commission, architects' fees, land register charges and construction fees, are also part of GFCF in dwellings. However, these costs are largely determined by tax data and the growth rate of the number of sold dwellings and therefore classified under (4) Extrapolation and models.

The third item in the column (5) Commodity flow method concerns an addition to GFCF in buildings in order to match with total production (4281 million euros). Similarly to dwellings, the production of buildings is provided by statistics on production (SBS) and the estimate includes other costs such as commission, architects' fees, land register charges and construction fees.

A large share of GFCF of software is determined as a balancing item (12,405 million) and registered in column (5) Commodity flow model. This includes standard software packages, royalties and licenses on software, and services related to the development own-account custom made software. GFCF is determined as the domestic output (from SBS) + import of services (trade statistics) - intermediate consumption - exports of services (trade statistics). For software licenses a correction is made to exclude licenses with a contract shorter than one year.

(6) Other

This column includes GFCF of agriculture based on data from the Agricultural Economics Institute (LEI). Every year, the LEI provides a balance sheet (opening and closing balance sheet) with detailed information about different asset types that includes main categories of tangible fixed assets, cultivated biological resources and intangible assets.

The largest estimate in column (6) Other is the adjustment in R&D (22,558 million). This adjustment is mainly due to the reclassification of a company that previously has been treated as a captive financial institution. For the benchmark level of 2015 the adjustment has been estimated with information from annual reports.

Other important adjustments in R&D include an adjustment for an overlap with software (-302 million euros) to arrive at R&D output. Also to estimate the GFCF (departing from R&D output) imports and exports of R&D are taken into account and intermediate use is excluded (-1452 million euros). Intermediate consumption is recorded in the R&D-industry (NACE Rev. 2 section 72) where purchases of R&D services are expected to be used and incorporated in the final R&D output. In addition intermediate consumption is recorded in the Activities of head offices (NACE Rev. 2 section 70.1). The translation from R&D output to GFCF is also given in annex 5.4. The translation process of Frascati based R&D expenditure to national accounts concepts of R&D-output (and subsequently GFCF of R&D) is described in annex 5.4.

(7) Data validation

GFCF in this column refers to car sales data from the Dutch car association (RAI) and data taken from the annual report of the Dutch railroads company (Nederlandse Spoorwegen) on own-account investment in trains. Both sources are used to supplement GFCF derived from the investment survey. Also adjustments on the investment survey and the R&D survey are reported in this column. These are related to other structures and R&D respectively and are based on company-specific data on GFCF that have not been covered by these surveys.

(8) Conceptual changes

In the column (8) Conceptual adjustments on GFCF in R&D are recorded. This adjustment contains a number of different conceptual changes. The first one concerns the transformation of gross expenditure on research and development to national accounts concepts of R&D output (-277 million euros). The adjustment comprises the inclusion of user costs of capital instead of consumption of fixed capital, a mark-up for genuine profits in case of market R&D, and the inclusion of subsidies on R&D production. The mark-up for profits is assumed to be a fixed rate of 5 per cent of the sales of market R&D as observed in the R&D survey. Subsidies on production are based on the monthly administrative data wages and social contributions from the Institute for Implementations of Employees' Insurances (UWV). This subsidy is based on an Act (WBSO) and consists of a fixed deduction on income tax, lowering the wage costs for companies that invest in R&D.

(9) Exhaustiveness

Estimates for GFCF of illegal production of cannabis and for energy production by households (solar panels) are recorded here.

(10) Balancing

The adjustment is a consequence of fine tuning between supply and use. Total balancing adjustment is -1406 million euros. Due to a large surplus of demand GFCF in machinery and installations has been adjusted considerably (-1746 million euros).

Process table: types of asset (AN-category)

The column Survey and censuses (1) contains amounts that are derived from the investment survey, the ICT expenditure survey and the R&D survey. Administrative records (2) refers to data from the government sector and the financial institutions sector. Extrapolation and models (4) mainly concerns the methods that are used in order to estimate the industries NACE Rev. 2 sections 70 an 85.5-94. The column Other (6) concerns data from the agricultural economics institute (LEI) and the international trade statistics (imports of airplanes). Other important adjustments are described in the section below.

AN. 111 Dwellings, the estimate applies a commodity flow method based on the total production of dwellings by construction industry. It includes owner occupied dwellings which are registered in the NACE Rev. 2 section 68 (real estate activities) in table 5.15 and in the sector households in table 5.16 (S14). The balancing adjustment (-122 million euros) assures the equality of supply and use of dwellings.

AN.1121 Buildings other than dwellings, to estimate the GFCF in construction type assets (dwellings, buildings) the commodity flow method is used. This led to an additional estimate of 3981 million euros on buildings. Other adjustments that occurred during the balancing process amount to -81 million euros and relate to adjustments in the supply of construction services related to buildings.

AN.1122 Other structures, confronting the results of the investment survey with Structural Business Statistics (SBS) for a company in the industry Manufacture of chemicals and chemical products led to an adjustment of 574 million. This is registered in the column Data validation (7). The adjustment for balancing amounts to 172 million euros and assures the equality of supply and use of construction activities.

AN.1131 Transport equipment (broken down into different transport vehicles), there are two data sources used for estimating GFCF in passenger cars. Investment survey results (part of column (1) Survey and censuses) for passenger cars are adjusted to match total car sales from the Dutch car association (RAI). This adjustment is registered in the column data validation (7). Another important source is the international trade statistics and concerns the imports of airplanes. The adjustment of GFCF to this source (1300 million euros) is included in column Other (6).

AN.1132 ICT equipment, includes computers and communication equipment. The main source for computers and communication equipment is the investment survey and is registered in column (1) survey & censuses. Column (4) Extrapolation and models includes for a large amount the estimates of health care industry.

AN.1139a Machinery and installations, the investment survey is the main source for this type of asset. The most substantial addition adjustment is for GFCF in agriculture based on LEI data and can be found in the column (6) Other. The balancing adjustment is -832 million euros.

AN.1139b Other machinery and equipment, the investment survey is the main source for this type of asset and is registered in column (1) Survey & censuses. Column (4) Extrapolation and models contains the industries of which new benchmark levels have been estimated. These include the industries activities of head offices, private education, health care, arts, entertainment and recreation and activities of membership organisations (respectively NACE Rev.2 section 70.1, 85.5, 86-88 and 90-94).

AN.114 Weapon systems, the estimate for weapon systems is based on administrative sources from the government and is registered in column (2) Administrative records.

AN.115 Cultivated biological resources, estimates are based on data from the Agricultural Economics Institute (LEI). Every year, the LEI provides a balance sheet (opening and closing balance sheet) with detailed information about different asset types that includes main categories of tangible fixed assets, cultivated biological resources and intangible assets. There are no balancing adjustments made.

AN.1171 Research and development, the R&D survey is taken as a source for domestic R&D supply and use. The translation process of Frascati based on R&D expenditure to national accounts concepts of R&D-output (and subsequently GFCF of R&D) is discussed above. In column 6 (other) 22558 million is registered. This amount is due to a reclassification of (incidental) transactions of one company that previously have been regarded non-produced assets. The 2015 GFCF in R&D of this company is estimated with information from annual reports.

AN.1172 Mineral exploration and evaluation, for mineral exploration gross fixed capital formation is determined as a balancing item. GFCF is equal to the domestic output (from the SBS) + import of services (trade statistics) - intermediate consumption - exports of services (trade statistics). No balancing adjustments are made.

AN.1173 Computer Software and Databases, in the case of software several sources and methods are used to estimate the different types of software (For example information on IT-staff and labour costs are used to estimate own-account software and the commodity flow method is used to derive estimates for software services, licenses and standard software packages. These are registered in column 3 (combined data) and 5 (commodity flow model) respectively. In column 6 (other) 5210 million is registered. This amount is due to a reclassification of a company that previously has been treated as a captive financial institution.

For the benchmark level in 2015 GFCF in software has been estimated with information from annual reports.

AN. 1174 Entertainment, literary and artistic originals, estimates for movies, documentaries and drama series are based on information from annual reports of different organisations such as the film fund (Filmfonds). GFCF in other originals (music, designs, photos, sheet music, books, television formulas) are estimated with the help of the flow of related royalties. These flows are obtained from nine collective management organisations that collect the royalties. There are no adjustments made.

Sales of existing fixed assets

Acquisitions are confined to newly produced assets and import of second-hand trucks. It is assumed that sales on the domestic second-hand market occur between enterprises within the same industry on the level of classification applied in the GFCF-estimation in the national accounts with the exception of government and financial institutions. Another exception is the sale of leased cars. In case existing assets are disposed and sold to non-resident units these are recorded as a disinvestment and exports of goods. The main data source for disposals is the statistics on the international trade in goods, which contains information about exported second hand assets. The export of second hand assets includes the sales of licenses and royalties of a company that formerly has been treated as a captive financial institution. The total amount estimated for the sales of second-hand fixed assets in 2015 (disposals) is 11504 million euros (Table 5.18). For 9959 million euros these fixed assets are sold abroad (exports) and the remaining 1545 million euros concern disposed lease-cars. The service life under lease arrangements of leased cars is set to an average of approximately 4 years (50 per cent after 3.5 years and 50 per cent after 4.5 years of use) after the acquisition by the industry renting and leasing activities (NACE Rev. 2 section 77). After the lease arrangement the cars are assumed to be sold to households. The disposals of lease cars are recorded as a disinvestment and as final consumption expenditure of households.

Table 5.18 Sales of existing fixed assets, 2015

	Basis for national accounts figures							Adjustments				
	Survey & Censuses	Administrative records	Combined Data	Extrapolation and models	Commodity Flow Model	Other	Total	Data validation	Conceptual	Exhaustive-ness	Balancing	Final estimate
	(1)	(2)	(3)	(4)	(5)	(6)		(7)	(8)	(9)	(10)	
	million euros											
Sales of existing fixed assets	11.504	0	0	0	0	0	11.504	0	0	0	0	11.504
Exports	9.959	0	0	0	0	0	9.959	0	0	0	0	9.959
Domestic sales	1.545	0	0	0	0	0	1.545	0	0	0	0	1.545

5.11.2 Main data sources and their conversion to national accounts results

Surveys and other types of data sources are used to estimate gross fixed capital formation. Most of the surveys use the statistical business register (SBR) as a reference for selecting the units to be observed.

The most important data sources are the investment survey, government data, data on financial institutions, the R&D-survey, the ICT-expenditure survey, data from the Agricultural Economics Institute (LEI), car registry data from the Dutch car association (RAI), international trade statistics, and Structural Business Statistics (SBS).

Data on GFCF in government and subsidized education (NACE Rev.2 section 84-85) is obtained from government statistics. Estimates are based on financial administrations and public documents (e.g. budgets and annual reports). Two NACE industries rely fully on data from the government accounts. These are the NACE Rev. 2 sections 84 and 85.2-85.4 (general government and subsidized education). A more detailed description of the source data is given in section 3.21 Public administration and defence; compulsory social insurance (NACE Rev. 2 Section O), and 3.22 Education (NACE Rev. 2 Section P).

For GFCF in the financial services industry (NACE Rev. 2 sections 64 to 66) data are obtained from information collected by the Dutch Central Bank (DNB) and annual reports. The surveys of DNB consist of yearly or quarterly key figures on monetary financial institutions, pension funds, insurance companies and investment funds that are supervised by the Dutch Central Bank. DNB also provides data on other financial corporations (S.124-S.127), on special purpose vehicles, and the Central Bank.

It should be noticed that GFCF as reported in the investment survey includes own-account GFCF. The structural business statistics (SBS) is used to identify the share of own-account GFCF in total GFCF. Expectedly the SBS gives a reliable total for own-account investment in the asset types other buildings and structures (AN.112), transportation equipment (AN.1131), machinery and installations (AN1139a), and other machinery (AN.1139b). The breakdown of own-account GFCF from the SBS into types of assets is done by taking the balanced results of the previous year as a distribution key. The estimate for own-account construction of dwellings is described in section 7.1. For own-account software, research and development (R&D), and other intangible investments additional estimates are made and added to own-account GFCF. The method to estimate own-account R&D investment is described in the annex 5.4. Own-account GFCF in mineral exploration and evaluation is determined as a balancing item.

Data on GFCF includes large-scale maintenance. The guidance supplementing the survey explicitly requests to report on large-scale maintenance that lengthens an asset's service life.

No separate estimates for land improvements are made. Major improvements to land are included in the GFCF questionnaire under civil engineering works AN.1122 Other structures. It is not possible to separate the value from the total AN.1122 Other structures. In ESA 1995 land improvements were also regarded as capital formation.

In the case of financial lease a transfer of ownership of the asset takes place between the lessor to the lessee. Since the ownership principle is followed in measuring GFCF, financial lease of for example planes, machinery or other transport equipment is included as GFCF in the accounts of the lessee. This is contrary to the case of operational lease where GFCF is recorded in the accounts of the lessor.

Acquisition of new assets is adjusted for work in progress in construction activities. In accordance with ESA 2010 guidelines, these activities are registered as GFCF when the ultimate user is deemed to have taken ownership (either because it is for own use or as evidenced by contract) instead of on the moment the assets is finished and acquired. In practice however the investments are registered when the costs occur. To correct for this, information on work in progress is obtained from the investment survey. In the investment survey a separate question on work in progress is included, providing an opening and closing balance sheet.

The R&D survey is taken as a source for domestic R&D supply and use. The translation process of Frascati based R&D expenditure to national accounts concepts of R&D-output (and subsequently GFCF of R&D) is already given in section 5.10.1 and annex 5.4.

Separate calculations are made with regard to the cost of transfer of ownership of land, dwellings and buildings and subsequently included in GFCF. Other costs such as commission, architects' fees, land register charges and construction fees which are part of GFCF represent a fairly fixed percentage of total acquisition of land, dwellings and buildings. Therefore a reliable estimate for these additional costs can be made. In general transfer costs of dwellings were calculated as the typical 3 per cent of transaction values, which were taken from the various sources such as the investment survey, annual accounts, expert information, the LEI etc. Transfer costs other than transfer taxes (e.g. payment for notary services) were calculated using a fixed ratio between transfer taxes and these other transfer costs.

Transfer costs on intangible non-produced fixed assets will generally involve only small-scale items, since this gross fixed capital formation relate exclusively to asset ownership transfer costs. These mainly relate to fertilizers and milk quotas, which are transferable and even, to some extent, negotiable. The concomitant costs (e.g. for registration) are attributed to gross fixed capital formation. The LEI reports (Agricultural Economic Report - LEB) describe major intangible fixed-asset investments by agriculture.

For use in the supply and use tables the asset types are broken down into product groups. This breakdown is based on the balanced results of the previous year. The fraction of the product group per asset type of the previous year is taken as a reference to achieve the breakdown in the current year. From one year to another, the balancing process influences the fractions that are used for the next year.

For non-deductible value added tax (VAT) a combination of two schemes is used. The first scheme gives per industry the part of output that is exempted from VAT. This percentage indicates what part of GFCF of the concerning industry is ultimately charged with VAT. The other scheme gives the VAT-rates by product in standard rate, low-rate or zero. Applying the rates of the corresponding year both schemes are used to produce a table with the rates per industry and per product. Subsequently, this table is applied to the GFCF estimates in order to calculate the non-deductible VAT on GFCF.

5.11.3 Detailed estimation methods used by AN code

AN. 111 Dwellings

Estimates for GFCF in dwellings are based on the total production of dwellings resulting from the SBS on construction. Other costs such as commission, architects' fees, land register charges and construction fees which are part of GFCF represent a fairly fixed percentage of 3 per cent of total GFCF in new dwellings. Therefore a reliable estimate for these additional costs can be made. Two other sources for gross fixed capital formation in dwellings are Institutional investors (NACE 64-65) and NACE 84 (local authorities). These parts are deducted from the estimated production total, so that the result of the commodity flow method represents GFCF in the industry NACE Rev. 2 section 68 (real estate activities) and includes owner occupied dwellings and own account construction (see section 7.2).

AN.1121 Buildings other than dwellings, AN.1122 Other structures, AN.1131 Transport equipment (broken down into different transport vehicles), AN.1132 ICT equipment, AN.1139a Machinery and installations, and AN.1139b Other machinery and equipment

Data are mainly obtained from the investment survey. The methods used for the industries that are not covered by this survey vary. For a part of these industries new benchmark levels have

been estimated. These industries include head offices, private education, health care, arts, entertainment and recreation, and activities of membership organizations (respectively NACE Rev. 2 sections 70.1, 85.5, 86-88 and 90-94). For real estate activities (NACE Rev. 2 section 68) a large part of the GFCF (95 per cent) is determined by the commodity flow method of the construction related assets (AN.1121 Buildings and AN.111 Dwellings). For other assets such as transport equipment and machinery and installations investment survey results are used. GFCF in agriculture is estimated with data of the Agricultural Economic Institution (LEI). Data on GFCF in government and subsidized education is obtained from government statistics. Estimates are based on financial administrations and public documents (e.g. budgets and annual reports). A more detailed description of the source data is given in section 3.22 and 3.23. In the financial services industry (NACE Rev. 2 sections 64 to 66) data is obtained from information collected by the Dutch Central Bank (DNB) and annual reports (see section 5.11.1).

Since the investment survey also contains information about work in progress, GFCF estimates are adjusted for work in progress of construction activities. In line with the ESA 2010 rules these activities are registered as GFCF when that the ultimate user is deemed to have taken ownership (either because it is for own use or as evidenced by contract). As mentioned before, in practice the investments are registered when the costs occur. The information on work in progress is obtained from the investment survey. In the investment survey a separate question on work in progress is included, providing an opening and closing balance sheet.

In case of AN.1131 Transport equipment (passenger cars) car registry information of the RAI (Dutch car association) is used in combination with the investment survey. In addition international trade data is used for GFCF in airplanes, airplane parts, and jet engines. The breakdown into different types of vehicles (the asset types passenger cars, ships, other vehicles, airplanes, trains and trams) is done with reference to the previous year (t-1).

AN.114 Weapon systems

Data on weapon Systems (AN. 114) are provided on a quarterly basis by the ministry of defence. Statistics Netherlands distinguishes 5 types of assets in weapon systems. These are electronic or telecommunication equipment; tanks, weapons and munitions; transport equipment; warships, and warplanes. A more detailed description of the source data is given in section 3.22.

AN.115 Cultivated biological resources

The Agricultural Census is used to determine changes in the numbers of livestock for various categories. The over the year change in numbers of livestock is valued by the average prices of the corresponding categories. The total value is registered as GFCF under AN.1151.

For GFCF in *Tree, crop and plant resources yielding repeat products (AN.1152)* data of the Agricultural Economics Institute (LEI) are used. Annually the LEI provides a balance sheet (opening and closing balance sheet) with detailed information on different types of assets that includes the main categories of tangible fixed assets, cultivated biological resources and total intangible assets.

AN.1171 Research and development

GFCF in research and development is compiled by means of the Frascati-based R&D-survey on R&D-producers such as enterprises, research institutes and universities. Besides the R&D survey, the SBS of NACE Rev. 2 section 72 (Research and development industry) and the international trade in services statistics are used for the estimation of GFCF.

The Frascati based survey includes information on the R&D related compensation of employees, other operation costs (excluding consumption of fixed assets) and capital expenditure (buildings, machinery etc.). Gross expenditure on research and development (GERD) according to Frascati guidelines is calculated as the sum of these three expenditure categories. The survey also provides information on R&D purchases (by type of provider) and R&D sales (by type of purchaser) in a sort of supply and use framework. These sales and purchases do not include the intra-enterprise R&D (own-account R&D) produced by separate entities on behalf of affiliated producers.

Some of the recording principles of the R&D survey are not in accordance with the System of National Accounts. For example the Frascati based R&D surveys considers certain parts of software development as part of R&D. Supplementary adjustments are necessary to estimate R&D-output and related assets in consistency with other intangible assets covered in the system of national accounts.

Frascati-based R&D statistics are translated to comply with ESA2010-guidelines. Gross expenditure on R&D (GERD), by producer and by funder, as observed in the R&D surveys is translated to R&D-output and R&D-use (R&D-expenditure) according to National accounts conventions. On the macro-level the step from R&D-output to R&D-use (GFCF) is relatively simple. However identifying the investing industries is not straightforward. It requires identification of buyers of market-R&D. At Statistics Netherlands this is achieved with the help of the R&D-survey in which the R&D-sales (by type of purchaser), and R&D-purchases (by type of provider) can be identified.

A more detailed description of the method to estimate GFCF of research and development is given in annex 5.4.

AN.1172 Mineral exploration and evaluation

Mineral exploration is partially treated as GFCF. GFCF is based on the following formula representing the commodity flow method:

GFCF = domestic output (section) + import of services (trade statistics) - intermediate consumption - exports of services (trade statistics). Intermediate consumption of mineral exploration is recorded because of the existence of subcontracting.

Mineral exploration 2015 in current prices, million euros *

Total supply at basic prices	7352	A
Domestic output	5854	
Imports of services	1498	
Total use at purchaser's prices	7352	A
Intermediate consumption	1506	B
Export of services	5700	C
GFCF	146	GFCF=A-B-C

* balanced results

AN.1173 Computer Software and Databases

The OECD-handbook on Intellectual Property Products (IPPs) distinguishes a number of different categories of software investments: A) Purchases of software packages; B) Payments of royalties and licenses on software (when the license payment involves a contract for more than one year); C) Payment for services related to the development own-account custom made software. This includes the hiring of IT-specialists and IT-consultants that have the task to advise on new software systems and to implement new software systems and packages; D) Investments in own-account software.

For the estimation of own-account software useful information can be obtained from the ICT expenditure survey conducted by Statistics Netherlands. The survey covers the same population of enterprises as the annual EU harmonized survey on ICT usage and e-commerce in enterprises. Therefore it includes only enterprises with 10 or more employed persons, in a limited range of NACE groups (roughly: C through N, and Q of NACE Rev.2). So an additional estimate / mark-up for the units under the threshold is needed. The mark-up is based on total turnover per stratum. Furthermore other sources and assumptions are made in cases the ICT survey proved to be insufficient. Examples are the use of SBS in order to estimate payments for services related to the development of custom made software, or the use of labour costs of IT-specialists (NACE Rev. 2 section 62) to estimate own-account GFCF of software.

AN.1174 Entertainment, literary or artistic originals

In the case of Entertainment, literary or artistic originals all the criteria of the GNI Committee on Entertainment, Literary and Artistic Originals (GNIC/010 and GNIC/022) are met. Items concerning copyrights, the (enforceable) ownerships rights are specifically considered. Only originals as an end product are taken into account; items (e.g. drawings and prototypes) with no artistic intent are excluded..

To estimate GFCF in originals two methods are used. First, specific originals are obtained from information on movies and documentaries, and drama series. Investment in movies is estimated with the sum of the costs, which is obtained from the reports of the film fund (Filmfonds). As far as television drama is concerned, not all television drama series are capitalized. Several television drama series have a service life shorter than one year. Only the popular series will repeatedly be broadcasted. For this reason an adjustment should be made. In addition, a supplementary estimate is needed for the television drama series of *commercial* broadcasters.

There is no information available to make the above mentioned adjustments. It is expected Dutch television drama series are rarely repeated in later years (or broadcasted abroad). It is assumed that the investment in television drama of public and commercial channels over the period 1995-2015 was equal to ¼ of the spending on television dramas of the public broadcasters.

In the second method, the flows of royalties are considered. These are related to different kind of originals (e.g. music, writings, designs, photographs). For the flows of royalties information from nine collective management organisations that collect the royalties are taken into account. These are Buma/Stemra, Sena, Reprorecht Leenrecht, Thuiskopie, PRO, Picto and Lira. Royalties of an organisation are determined as follows:

- Revenues of royalties or of royalties that have become available for distribution (the second is preferred if available).
- Minus revenues of royalties that were collected by another management organisation.
- Minus the amount that is intended for foreign originals.

- Minus royalties on originals that are not regarded as an asset (newspaper articles, magazines).

The table below provides a list of collective management organisations and the corresponding originals. The table includes those originals generating royalty flows on a structural basis. Information on royalty flows refer to the year 2015.

Organisation	Focus on	Royalties (million euro)
Buma	Music – authors rights	161
Stemra	Music – reproduction rights	34
Sena	Music – performers 'rights	65
Reprorecht	Copies of writing	37
Leenrecht	Right of lending	13
Thuiskopie	Consumers 'right to copy	34
PRO	Readers	5
Picto	Designers, photographers	1
Lira	Authors – autors rights	17
Total		**367**

Double counting of for example music that is produced and used in a movie is avoided by looking at the flow of royalties. Royalties occur only in the case the music is used also for other productions, making the music an original. Music used only once (without royalty flows) in a movie is part of the movie (original).

No mark-up is applied for the operating surplus in case of films and radio stock programs, since production of Dutch films and TV-programs are not profitable and are mostly subsidized.

In determining the value of originals with the flows of royalties the EU task force recommended the formula that is used by several countries in Europe. The formula is recommended and explained in the Handbook on Deriving Capital Measures of Intellectual Property Products of the OECD (2010). See Chapter 5, section 35 and page 159 for the specific recommendation:

$W_j = H_j * (1+g_j-i_j)$

Where W_j is the present value of originals produced in year j, H_j is the sum of royalties paid in the total economy during the year j, g_j is the nominal growth rate of royalties compared with the previous year and i_j is the nominal interest rate used for discounting (inflation rate). The estimates of g_j and i_j are estimated for a single year.

There is no explicit theoretical model behind this calculation. This formula proved to fit the available data in the best way. For inflation, the deflator of household consumption expenditure is used. A more detailed description of the method to estimate GFCF of Entertainment, literary or artistic originals is given in annex 5.4.

5.12 Changes in inventories

5.12.1 Main categories

In the Dutch national accounts changes in inventories are dominated by three categories:

- Finished products and work in progress;
- Basic and ancillary materials;
- Goods for resale.

In monetary terms, these categories make up for the largest part of the total annual change in inventories. In addition changes in inventories will also include changes in livestock and inventory changes related to large investment projects. Compared to the aforementioned categories, the changes in livestock and inventory changes related to large investment projects are small. The benchmark revision of 2015 also includes an estimate for the transactions of public stockpiling units (-91 million euros) which is included in basic and ancillary materials. Also changes in military inventories held by the government is assigned to this category (-84 million euros).

Table 5.19 below shows the changes in inventories for the aforementioned categories for 2015. The total change in inventories in the Netherlands amounted to approximately 2.2 billion euros.

Table 5.19 Changes in inventories, 2015, mln. euros

	Changes in inventories
Finished products and work in progress	-471
Basic and ancillary materials	287
Wholesale and retail inventories	2597
Inventories related to large investment projects	-133
Livestock	-36
Total	**2244**

5.12.2 Data sources

Structural business statistics are the main data source for estimating changes in inventories for finished products and work in progress, basic and ancillary materials and goods for resale. Data on inventories are part of Structural Business Statistics covering a wide array of industries such as manufacturing, retail and wholesale trade, construction, transport and commercial services. The inventory-related questions concern the value of the opening and the closing stocks, however without any detail on products. The number of questions on inventories varies depending on the NACE-class of the industry the survey is sent to. For instance, the survey for the wholesale trade does not contain questions about inventories of finished products but only about goods for resale. Work-in-progress is covered in SBS, but not as a separate question. Respondents are requested to report work-in-progress in finished products.

Next to SBS, information is drawn from the survey on investment outlook and statistics from the Agricultural Economic Institute (LEI). These data are used for the estimation of inventories linked to large investment projects and livestock respectively.

5.12.3 Estimation methods

Finished products and work in progress, basic and ancillary materials, goods for resale in wholesale and retail trade

The methods to estimate changes in inventories of finished products and work in progress, basic and ancillary materials and goods for resale in wholesale and retail trade are based on data from structural business surveys and are by and large similar. Firstly, the business data are aggregated to the industry classification used in the Dutch supply and use table. Then, by subtracting the opening stock from the closing stock a nominal estimate for changes in inventories is determined. To determine the 'real' change in inventories, the nominal estimate is adjusted with revaluation. Box 2 below provides a detailed explanation of the estimation method.

Business statistics provide information on the total amount by type of inventory but lack product details as required for the supply and use table. Therefore, additional data sources are used to attain a breakdown into the product groups used in the SUT. The so-called Prodcom statistics are used for inventories of finished products and work in progress and goods for resale in manufacturing. Prodcom statistics provide sales-data by product (CPA) that can be linked to product groups of the SUT. It is assumed that the composition of inventories is similar to the composition of sales as reflected in Prodcom statistics. For goods for resale in the trade industry net turnover data are used to classify goods by product groups. Similarly as in the manufacturing industry, it is assumed that commodity net turnover shares correspond to commodity inventory shares. Some goods are excluded since it is unlikely that they are held in inventories, for example newspapers or flowers. For the breakdown into product groups of inventories of basic and ancillary materials information on intermediate consumption is used, which is derived from business statistics. In a similar vein as finished products and goods for resale, the underlying assumption is that the composition of inventories is similar to the composition of intermediate consumption. Combining the data on inventories from business statistics with Prodcom data and data on intermediate consumption thus allows estimating changes in inventories by industry and product group.

It is assumed that the difference between the closing and opening stock from the business survey consists of the 'real' change in inventories plus the revaluation of the commodities that are held in stock for a certain time period during the year. Losses due to physical deterioration have no value for the enterprise and are thus no part of the closing stock. Changes in inventories are therefore automatically adjusted for losses using SBS-data. To split the initial estimate of the changes in inventories into revaluation and 'ESA2010'-inventories, holding gains and losses are estimated by subtracting the difference between the revalued opening and closing stocks from the original opening and closing stocks (from the SBS-data). See box 2 below for a more detailed explanation of the estimation method. The applied product price indices depend on the type of inventory. For revaluation of finished products and goods for resale producers' prices are used. For basic and ancillary materials revaluation is computed with a combination of producers' and import prices as an approximation because dedicated price indices for intermediate consumption are not available.

Box 2 revaluations of inventories in the Dutch national accounts

In the Dutch national accounts opening and closing balances of inventories are adjusted for holding gains and losses to accurately measure changes in inventories. This is done for the inventories of finished goods, materials and supplies and goods for resale. Holding gains and losses are also removed from production and intermediate use.

Estimation method of holding gains and losses

Holding gains and losses are estimated as follows:

(1) $H_t = S_n - S_o - S_{n/t} + S_{o/t}$

(2) $S_{n/t} = \frac{S_n}{p_{t+1}^{5/12}}$

(3) $S_{o/t} = S_o \times p_t^{7/12}$

Where

$H_t = Holding\ gain\ or\ loss$

$S_n = End\ of\ period\ stock$

$S_o = Beginning\ of\ period\ stock$

$S_{n/t} = End\ of\ period\ stock\ at\ average$ *prices of reporting year (t)*

$S_{o/t} = Beginning\ of\ period\ stock\ at\ average$ *prices of reporting year (t)*

$p_{t+1} = Average\ price\ change\ between\ year\ t+1\ and\ t$

$p_t = Average\ price\ change\ between\ year\ t\ and\ t-1$

The opening stocks (equation 3) and closing stocks (equation 2) are revalued to average prices of the reporting year (year t), taking into account:

- That most resident enterprises use the first-in-first-out principle to value inventory in the Dutch structural business statistics.
- A one month stock holding period for all commodity groups and NACE industries, i.e. opening and closing stocks were purchased in November. This holding period is based on the ratio between values of the stock of inventories and turnover.

Closing stocks are revalued by deflating with 5/12 of the average annual price change between year t+1 and t. Opening stocks are revalued by inflating with 7/12 of the average annual price change between year t and t-1.
The holding gain or loss is derived by subtracting the difference between the revalued opening and closing stocks from the original opening and closing stocks. This method is based on the assumptions that prices increase linearly throughout the period and that changes in volume of inventories increase or decrease linearly between the opening and closing stocks.

(Box 2 continued)

This method differs from the recommendations in the Eurostat guide on inventories[2] in that no monthly or quarterly price information is used to calculate deflators, because we estimate that corrections to changes in inventories resulting from the use of higher frequency price data, are small in comparison to the actual corrections made to changes in inventories in the SUT. In 2015, for instance, the difference between opening and closing stocks of goods for resale in SBS was adjusted downwards by 1.5 billion euro's, while a (rough) estimate indicates that using monthly price information to deflate inventories of goods for resale would result in an additional downward adjustment of changes in inventories of 0.2 billion euro's.

For crude oil and petroleum products monthly quantities of total inventories (opening and closing stocks in thousands of kilograms) are available[3]. However, this data is not used to calculate revaluations and changes in inventories in the national accounts, as these monthly figures are based on the cross-border principle instead of economic ownership. All crude oil and petroleum products in the economic territory of the Netherlands are included in the crude oil and petroleum balance sheets even if economic ownership of the goods are not transferred to or from Dutch residents[4].

The use of crude oil and petroleum balance sheets to estimate changes in inventories in the national accounts would lead to inconsistencies in the measurement in production, as the sales and inventory figures in SBS are based on the economic ownership principle.

Table 5.20 contains revaluations of inventories for the benchmark year 2015.

Table 5.20 Balance sheet of inventories for benchmark year 2015, in million euro

	Opening stock	Revaluation	Changes in inventory	Closing stock
Goods for resale	56175	-18	2829	58986
Finished goods	17177	-328	430	17279
Materials and supplies	11917	-148	494	12263

Adjustments to production and intermediate use
Production and use of the industries were adjusted for holding gains and losses. The adjustment depends on the type of inventory:

5 Inventories of finished goods: Holding gains are subtracted from production and losses are added to production.
6 Inventories of materials and supplies: Holding gains are added to intermediate use and losses are subtracted from intermediate use.
7 Inventories of goods for resale: Holding gains are subtracted from wholesale trade margins and losses are added to wholesale trade margins.

2 See paragraph 5.2 of the guide.
3 Source: Dutch crude oil and petroleum balance sheets.
4 An analysis of the inventories of crude oil for the top 4 refineries in the crude oil balance sheet (where quantities are converted to values using unit values from ITGS and one month stock holding period) and SBS, show inconsistencies that should be evaluated further and, if possible, resolved before using the crude oil balance sheet to correct for changes in inventories in SBS.

(Box 2 continued)

In benchmark year 2015 the adjustments were as follows:

- The holding loss on inventories of finished goods of 328 million euro is added to production of goods.
- The holding loss on inventories of materials and supplies of 148 million euro is subtracted from intermediate use.
- The holding loss on inventories of goods for resale of 18 million euro is added to production of wholesale trade margins.

On balance, production is adjusted upwards by 346 million euro (=328+18) and intermediate use is adjusted downwards by 148 million euro.

Since the business survey only contains information on the value of the opening and closing stock, individual additions to and the withdrawals from inventories cannot be computed from the survey data. For the estimation of the changes in inventories the assumption is made that enterprises record individual flows appropriately with correct volumes and prices and that this is reflected in their reported values in the business survey. With respect to pricing it entails that 1) for a particular product entry and withdrawal are valued with the price valid at the time when the change in inventories occurs and that 2) finished products and work-in-progress is valued at basic prices and materials and supplies with purchasers' prices. It is assumed that the same holds for losses.

In practice the use of business survey gives rise to discrepancies. These occur due to the fact that the reported opening balances may deviate from the reported closing balance of the previous year. Also statistical procedures may lead to discrepancies, for instance due to a change in sample. In a revision year discrepancies are zero because the opening and closing balance are taken directly from the source data. In a non-revision year discrepancies are non-zero because the opening balance as observed from the source data is adjusted to the closing balance of t-1. For example, in the table below discrepancies in inventories of goods for resale are represented for the different industries for the year 2014.

Table 5.21 Statistical discrepancies by industry, 2014, mln euros

Industry	2013 closing balance	2014 opening balance	Discepancy
Business services	589	691	102
Construction	396	230	-166
Culture, recreation, other services	8	3	-5
Electricity and gas supply	2	4	2
Information and communication	246	436	190
Manufacturing	3032	2717	-315
Mining and quarrying	16	24	8
Trade, transport, hotels, catering	54410	52390	-2020
Water supply and waste management	0	0	0
Total	**58699**	**56495**	**-2204**

The table shows that discrepancies can be relatively large, for instance in the construction industry. In 2014 the total value of the discrepancy amounted to minus 2.2 billion euros. The differences between opening stock t and closing stock t-1 are among others due to (among others) sampling and grossing up. Such differences are treated as statistical discrepancies within the balance sheets for inventories. By doing, changes in inventories remain unaffected.

Basic and ancillary materials also contain transactions of public stockpiling units. These units are held by the Netherlands Petroleum Stockholding Agency (COVA). Annual reports have been used as input for the analysis. In the annual report, there are two stock positions on the balance sheet, namely the stock valued at purchasers' prices and at market prices. In addition, there are data available from the cash flow statement. This statement contains data on the cash paid and received related to changes in inventories. These data are used for estimating changes in inventories. For 2015, the change in inventories of stockpiling units is valued at purchasers' prices and estimated at -91 million euros.

Military inventories (AN.124) are also included in basic and ancillary materials and are estimated using data from the Ministry of Defence. Data comprise year-end balances and the expenditure on military supplies. Due to the lack of Dutch price information revaluation of the current stock is computed using the American army inflation index. Given year-end balances of t, t-1, procurement and the estimated revaluation, the outflow from inventories is computed. Subsequently, the change in inventories is determined as expenditure minus outflow. For 2015, the change in military inventories is estimated -84 million euros

Inventories linked to large investment projects

For the estimation of inventories linked to large investment projects the data source is the annual business survey on investments outlook. From this survey data on investments projects expected to be finished in year t+1 and amounting to 100 million or more are selected. The largest investment projects are conducted in manufacturing of food, manufacturing of cokes and petroleum products, and the manufacturing of chemicals. For these industries it is assumed that machines are a considerable part of multi-annual investment projects. Since the survey does not specify type of investment, the expected investments in machines are computed by using the share of realized investments in machinery in total investments in year t. Having derived the expected investment in machinery in year t+1, it is assumed that 20 per cent of it concerns a multi-annual investment project and are not directly taken into production but should be regarded as a kind of work in progress in year t. It is assumed that a multi-annual investment project in machines spans a two-year period on average. The change in the stock of this type of inventory of machines is then computed as the stock of year t – the stock of in year t-1.

Livestock

The estimation of the changes in inventories in livestock is based on annual data from the Agricultural Economic Institute and the agricultural census. Livestock comprises cattle raised for food consumption such as cows, pigs and poultry. Changes in inventories are estimated by a volume times price method in which the change in inventory in volume terms relies on the data from the agricultural census. Price data is provided by the Agricultural Economic Institute.

Uncompleted structures

In the Dutch national accounts uncompleted structures such as dwellings and non-residential buildings are not treated as work-in-progress but as gross fixed capital formation. The underlying assumption is that uncompleted structures are pre-sold.

Other items

For business services it is assumed that work in progress is zero or negligible. For example, the total production of originals of films in the Netherlands amounts to around 60 million euros. As no information of cross calendar year productions is available, a speculative guestimate could be made, which will not exceed 5 million euros.

For large automation projects it assumed that parts of the computer programs can already be used before the total project is finished. Linked to the contractual periodical payments these parts are recorded as GFCF in the Dutch national accounts. As a consequence no estimate for work in progress is made for IT-services. Although this assumption can be questioned, it must be remarked that a shift from GFCF to work in progress would not influence the estimates of GDP and GNI.

5.12.4 Balancing in the supply and use table

After the estimation of the changes in inventories, the results are balanced in the supply and use table with production, import, consumption, investment and export. Table 5.26 provides an overview of the estimation process for 2015 starting with source data and the adjustments applied thereafter. The column conceptual depicts the estimated amount of revaluation that is included in the difference between de opening and closing stock from the business survey.

Table 5.22 Process table changes in inventories, 2015

	Basis for national accounts figures					
	Surv and censuses	Admin records	Combined data	Extrapol + models	Other	Total
	(1)	(2)	(3)	(4)	(5)	(6)
	million euro					
Finished products	137					137
Basic and ancillary materials	346					346
Wholesale and retail inventories	2811					2811
Work in progress (investment goods)	-132					-132
Change in livestock	-35					-35
Total	3127	0	0	0	0	3127

	Adjustments					
	Basis (Total)	Data val.	Concept.	Exhaust.	Balancing	Final estimate
	(6)	(7)	(8)	(9)	(10)	(11)
	million euro					
Finished products	137		-328		-280	-471
Basic and ancillary materials	346		-148		89	287
Wholesale and retail inventories	2811		-18		-196	2597
Work in progress (investment goods)	-132		0		-1	-133
Change in livestock	-35		0		-1	-36
Total	3127	0	-494	0	-389	2244

5.13 Acquisitions less disposals of valuables

The European Union task force on intangibles limited the number of goods (assets) to be classified as valuables to AN.131 Precious metals and stones, AN 132 Antiques and other art objects, and AN.133 Other valuables. The different goods that are distinguished at Statistics Netherlands are, pearls (AN.131), diamonds (AN.131), works of art (AN.132), antiques (AN.132), jewellery (AN.133), coins (not legal tender) (AN.131), non-monetary gold (AN.131), stamps, museum exhibits, securities (all three concern antiques) (AN.133).

The acquisitions less disposals of valuables are estimated by using international trade statistics that provides information about the imports and exports of valuables. Furthermore, an estimate of domestic production and intermediate use is made with the help of expert information. In the balancing process estimates are adjusted by confronting supply and use.

The values estimated for each type of valuables are, 2015 (million euros):

pearls (AN.131)	-
diamonds (AN.131)	-
works of art (AN.132)	125
antiques (AN.132)	-
jewellery (AN.133)	35
coins (not legal tender) (AN.131)	13
non-monetary gold (AN.131)	-3
stamps, museum exhibits, securities (all three concern antiques) (AN.132)	132

Table 5.23 Process table acquisition less disposals of valuables, 2015

	AN. 131	AN.132	AN.133
Supply	**893**	**289**	**52**
Production NACE 3621	13	0	0
Production NACE 9231	0	28	0
Imports (cif)	825	254	48
Margins	55	7	4
Use	**883**	**56**	**13**
Intermediate use	11	0	1
Inventories (change)	0	0	1
consumption	0	0	0
Exports (fob)	872	56	11
Aquisitions less disposals of valuables	**10**	**233**	**39**
Balancing	0	24	-3
Aquisitions less disposals of valuables (balanced)	**10**	**257**	**35**

In the balancing process of 2015 there was a discrepancy between supply and use of works of arts (AN.132) and other valuables (AN.133). The total balancing adjustment of acquisition less disposals for these types of valuables amounted 21 million euros.

5.14 Exports and imports of goods

5.14.1 Summary and process table

This section gives a summary of the process table for the exports and imports of goods and a short explanation of the different parts of the process table. More detailed elaboration (on sources, estimation methods, etc.) is given in sections 5.14.2 and further. Tables 5.24 and 5.25 present respectively the process tables for the exports and imports of goods.

(1) Surveys & censuses

All figures are obtained from the Foreign Trade Statistics (FTS), see sections 5.14.2 and further for more details.

(7) Data validation

This column contains adjustments on the source data of specific companies made by the national accounts department. Because information from several statistical sources is

Table 5.24 Process table of exports of goods, 2015

	Basis for national accounts figures					
	Surv and Censuses	Admin records	Combined data	Extrapol + models	Other	Total
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
	million euros					
Exports of goods	418.946	0	0	0	0	418.946
Of which:						
Intra-EU	302.510	0	0	0	0	302.510
Extra-EU	116.436	0	0	0	0	116.436

	Basis (Total)	Adjustments				Final estimate
		Data val.	Concept.	Exhaust.	Balancing	
	(6)	(7)	(8)	(9)	(10)	(11)
	million euros					
Exports of goods	418.946	-17.480	14.701	4.504	-2.297	418.373
Of which:						
Intra-EU	302.510	-9.416	14.045	4.504	-393	311.250
Extra-EU	116.436	-8.065	656	0	-1.904	107.123

Table 5.25 Process table of imports of goods, 2015

	Basis for national accounts figures					
	Surv and Censuses	Admin records	Combined data	Extrapol + models	Other	Total
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
	million euro					
Imports of goods	372.206	0	0	0	0	372.206
Of which:						
Intra-EU	200.483	0	0	0	0	200.483
Extra-EU	171.723	0	0	0	0	171.723

	Basis (Total)	Adjustments				Final estimate
		Data val.	Concept.	Exhaust.	Balancing	
	(6)	(7)	(8)	(9)	(10)	(11)
	million euro					
Imports of goods	372.206	-10.062	-15.416	1.792	4.406	352.926
Of which:						
Intra-EU	200.483	-7.242	-2.710	873	2.243	193.647
Extra-EU	171.723	-2.820	-12.706	919	2.163	159.279

combined at the NA-department, inconsistencies that did not become apparent in an earlier stage become visible. Adjustments recorded in this column may, for example, be adjustments made for transfer pricing or quasi-transit trade that are mistakenly registered as re-exports.

For more detailed treatment see section 5.14.4 A.

(8) Conceptual adjustments

Table 5.26 below shows the type of conceptual adjustment of column (8) of the process table.

Table 5.26 Conceptual adjustments 2015, details

	Allocation of FISIM	Other conceptual	Total conceptual
			(8)
	million euros		
Exports of goods	0	14701	14701
Of which:			
Intra-EU	0	14045	14045
Extra-EU	0	656	656

	Allocation of FISIM	Other conceptual	Total conceptual
			(8)
	million euros		
Imports of goods	0	-15.416	-15416
Of which:			
Intra-EU	0	-2710	-2710
Extra-EU	0	-12706	-12706

According to ESA 2010 change in ownership of goods is the decisive criterion for international trade in goods. This means that imports and exports of goods only occur when economic ownership is transferred between residents and non-residents. This applies irrespective of physical movements of transacted goods across frontiers (ESA 2010 par. 3.162). However, source statistics (FTS) records international trade in goods based on a goods crossing border

principle. Although in most cases crossing the border of goods will coincide with change of ownership, this is not always the case. For such exceptional cases adjustments have to be made on FTS-data. The FTS figures have been adjusted for:

- Merchanting
- Goods sent /received from abroad for processing or repair
- Other global production arrangements.
- Goods returned to sender
- Flows between affiliated enterprises
- Goods procured in ports by carriers

The last conceptual adjustment refers to the cif/fob-adjustment and – reclassification (only imports). These adjustments are further explained in section 5.14.4 B.

(9) Exhaustiveness

Table 5.27 gives a more detailed presentation of the estimates for exhaustiveness.

Table 5.27 Estimates for exhaustiveness 2015, details

	N1	N2	N3	N4	N5	N6	N7	Total exhaust
								(9)
	million euros							
Exports of goods	0	4100	0	0	0	0	404	4504
Of which:								
Intra-EU	0	4100	0	0	0	0	404	4504
Extra-EU	0	0	0	0	0	0	0	0

	N1	N2	N3	N4	N5	N6	N7	Total exhaust
								(9)
	million euros							
Imports of goods	0	919	0	0	0	0	873	1792
Of which:								
Intra-EU	0	0	0	0	0	0	873	873
Extra-EU	0	919	0	0	0	0	0	919

Column N2 include exports and imports of goods related to illegal transactions. This concerns international trade in drugs (Cannabis, Heroin, Cocaine and XTC) and smuggling of cigarettes. The estimates for illegal transactions are further explained in section 7.2.3.2 of this inventory.

Column N7 consists of an estimate for online trade This concerns internet sales by Dutch web shops to non-residents and internet purchases by Dutch residents in foreign web shops

These estimates are further explained in section 5.14.4 C.

(10) Balancing adjustments

The adjustments in this column are the result of the balancing op de supply and use table.

5.14.2 Supply and use table

In an open economy like the Netherlands imports and exports of goods and services play a significant role. Exports of goods are a major demand category in the use table amounting to 22 per cent of the total demand. Import of goods represent 19 per cent of total supply. Many product groups in the Dutch SUT have high import and export shares.

For exports the following 'demand columns' are distinguished in the supply and use table:

- P611 - exports of domestic production to the European Union;
- P612 - exports of domestic production products to third countries;
- P613 – (re-)exports of imports to the European Union (re-exports);
- P614 – (re-)exports of imports to third countries (re-exports).

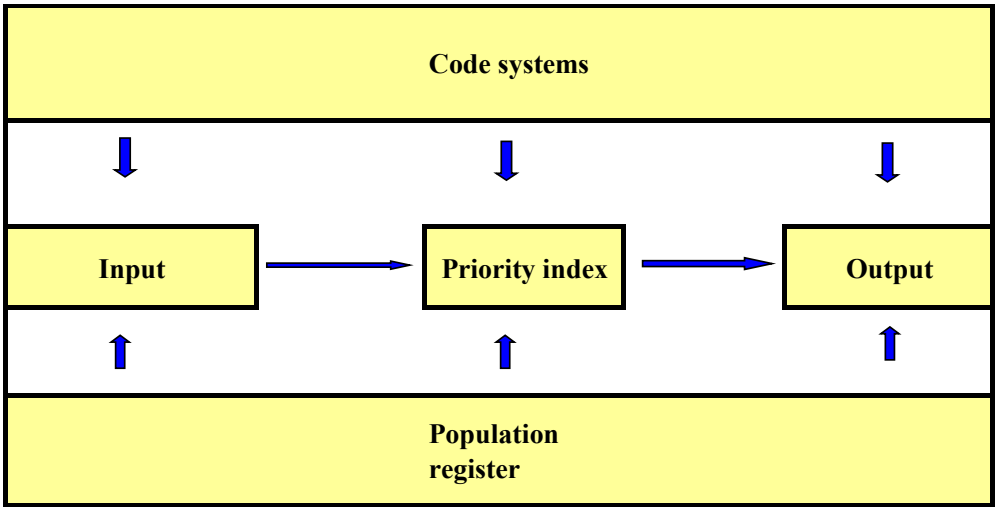
For imports two 'supply columns' are distinguished:

- P711 – imports from the European Union;
- P712 – imports from third countries.

Foreign trade statistics are the major source for data on imports and exports of goods in the national accounts. They are compiled by the foreign trade statistics department at Statistics Netherlands. Before these data can be incorporated in the national accounts they have to be adjusted to meet national accounts definitions. Section 5.14.3 describes the production process at the foreign trade statistics department. Section 5.14.4 describes the adjustments made at the national accounts department (data validation, conceptual adjustments and estimates for exhaustiveness).

5.14.3 Production process of foreign trade statistics

The production process consists of three sub processes: input, priority index and output. The code systems and the population register support the production process.



The population register

The register comprises around 340,000 units of observation. For the foreign trade statistics the VAT-unit is used as the unit of observation. In the data collection eight types of trade flows are distinguished:

- imports from European Union countries (1A);
- exports to European Union countries (1B);
- imports from non-European Union countries (1C);
- exports to non-European Union countries (1D);
- Imports for transit from European Union countries (1E);
- Transit exports to European Union countries (1F);
- Imports for transit from non-European-Union countries (1G);
- Transit exports to non-European-Union countries (1H).

Enterprises whose intra EU imports or intra EU exports exceeds 1,500,000 euros per year are obliged to submit data to Statistics Netherlands. Over 18,000 enterprises meet this criterion and they are observed in two different ways:

- Companies whose intra EU imports or intra EU exports exceeds 5,000,000 euros per year are obliged to supply data on a monthly basis;
- Companies having intra EU imports or intra EU exports between 1,500,000 and 5,000,000 euros per year are allowed to report once a month or once a year.

Estimates of the remaining units importing and/or exporting goods are based on individual Value Added Tax and Intra-Community Transactions (ICP) declarations provided to Statistics Netherlands by tax authorities on a monthly basis.

Code systems

The code system is a set of tables in which the codes and classifications applied in FTS are centrally maintained. Each code system describes a specific component such as countries, commodities and schemes for various ways of aggregating on the data. Each code system is made up of several codes, and exhaustively indicates which aspects it is composed of. For instance the 'aggregation types' code system: this system has four well-defined codes (1A to 1D; the other four codes refer to transit trade which is not published in the national statistics). Code 1A is 'imports from European Union countries' etc. (see above). The key code systems, 'countries' and 'commodities' are determined by Eurostat regulations.

Input

The directly observed units supply about 14 million records per month to Statistics Netherlands. These are mostly data on trade within the European Union. The data can be supplied in a number of different ways (electronic questionnaire (IDEP), via e-mail etc.). Data on trade with non-European Union countries come mainly from the customs authorities.

When all the data have been gathered, they enter a fully automated control and editing process. This process concentrates on identifying the control variables such as type of good and country code and the statistical system (is the company obliged to report). The subsequent process may proceed in one of the following three ways:

- For units of observation under obligation to report whose data are processed without problems, the data are ready for further processing in the next step, the Priority Index.
- For units of observation under obligation to report whose data contain incorrect codes (for example wrong country- or commodity-codes) the data are entered into an editing system (KORE). During the verification of codes errors are made visible and are interactively rectified. The verification process is partly manually (for large companies) and partly automatic (small companies).

- For units of observation not under obligation to report, it is checked why data were reported (this may happen for instance in case of mergers of companies or in case a company with only exports until now also starts importing goods) and whether the unit should be added to the 'obligatory' response or ignored (i.e. to be covered by VAT-data). If the observation unit is added to 'obligatory' response, the routing starts once again at 2.

All data coming in until the last day of the month following the reporting period, are included as response in the month concerned for the first publication. Large companies who fail to supply data to Statistics Netherlands on the eighth working day following the month on which returns must be filed, receive a reminder. All data coming in after the month following the reporting period are used for the following publications.

Priority index

In the priority index process, input data are checked once again before they are published, but at a higher level of aggregation. In this matrix 75 country groups and 370 product groups are distinguished. The priority index system is actually a very large table in which the columns contain values and quantities by country group and product group. In the rows of the table are trade flows by companies. In the matrix cells values and quantities by country and product group can be found for each company. The priority index system consists of the following eight main tables:

- imports from the European Union
- exports to the European Union
- imports from non-European Union countries
- exports to non-European Union countries
- Imports for transit from European Union
- Transit export to European Union
- Imports for transit from non-European Union
- Transit exports to European Union.

The *monthly priority index process* is run about four weeks after the closing of a report month. In this process initial estimates of the expected values on the enterprise level are made for all cells of the matrix. These estimates are made on the basis of the data of previous periods. The *daily priority index* process follows the monthly process. In this process the data supplied by the enterprises are placed in the matrix and compared with the initially estimated expected values. The results are scored with a priority index, which is an indication for the plausibility of each cell in the matrix. A high priority index may lead to further investigation of or enquiries about the supplied data. For enterprises that did not submit data to Statistics Netherlands imputed values from the initial matrix cells are used. These processes take place at various times between the end of the report period and six months after the end of the reporting year, when the final annual figures become available. Each time the process is run the estimates are assessed by the analysts from the department of foreign trade statistics.

In the final step estimates for units below the threshold are made. This is achieved with the aid of the Value Added Tax and Intra-Community Transactions data supplied by tax authorities. These data are also used as a final check in the results of the priority index process discussed above.

Output

The published results are an extract from the foreign trade statistics database. In the period after the first publication, responses will still be received by SN. As a consequence data are revised on a regular basis:

- s – (national accounts transcript) 25 days after reference month;
- d –40 days after reference month;
- n – 55 days after reference month;
- h – 85 days after reference month
- k – 115 days after reference month;
- j – definitive data, 7 months after reference year.

In the collection of data for FTS quasi transit trade is recognized and flagged. For the national accounts estimates for quasi transit trade are excluded from FTS-data.

5.14.4 Adjustments made by the national accounts department.

The procedure described in section 5.14.3 results in the figures that form the basis for national accounts (column 6 of the process tables 5.24 and 5.25). These figures still have to be completed and adapted in order to meet the national accounts requirements by the national accounts department.

First the classification of FTS has to be adapted to the national accounts classification. FTS uses the Combined Nomenclature (GN code), a compulsory European Union classification. For both the imputations and the estimates the department of foreign trade statistics uses an own aggregated classification of commodities. The classification of supply and use is based on the CPA/CPC. Because the Combined Nomenclature changes over time the linking scheme between GN code and the classifications of national accounts product groups is updated yearly. The linking scheme between GN codes and SUT codes can be found in section 9.3.

Subsequently the imports and exports are categorised according to the specifications required for the supply and use table. The following columns are generated for the imports:

- P711 – imports from the European Union;
- P712 – imports from third countries.

The exports columns are the following:

- P611 – exports of Dutch products to the European Union;
- P612 – exports of Dutch products to third countries;
- P613 – exports of imports (re-exports) to the European Union;
- P614 – exports of imports to third countries.

Subsequently a detailed breakdown is made for imports of second-hand goods and unspecified items in FTS. Imports of second-hand goods in FTS are specified by type, but more aggregated than the rest of the FTS data and are allocated to corresponding product groups in the SUT. Total import is not adjusted.

The unspecified items of FTS are allocated to products in the SUT; again total of imports and exports are not adjusted by this allocation.

After these transformations of FTS data several additional adjustments are made:

- Data validation

- Conceptual adjustments
- Exhaustiveness

A. Data validation (column 7 of the process tables)

Data validation relates to inconsistencies that become apparent in the SUT compilation process.

Exports of goods

Most of the adjustments made, relate to trade mistakenly categorized as re-exports instead of quasi-transit trade. Another adjustment was made for a case of double counting of exports (nr. 4). In this case, both the processor of the products (who also arranged transport) and the domestic owners who exported the products, reported the exports.

Table 5.28 Data validation on exports 2015, details

Nr	P38 code	Description	million euros	Reason corrections
1	P19	Coke and refined petroleum products	-6.058	From re-exports to quasi-transit trade
2	P20	Chemicals and chemical products	-1.065	From re-exports to quasi-transit trade
3	P21	Basic pharmaceutical products and pharmaceutical preparations	-9.678	From re-exports to quasi-transit trade
4	P24-25	Basic metals and fabricated metal products, except machinery and equipment	-500	Correction for double counting
5		Various productgroups	-179	Several reasons
Total, data validation			**-17.480**	

Import of goods

In one case an inward processer was not recognized as such, implying that the import and export flows of this unit were removed from the FTS data all together (see below under conceptual adjustments). However, because part of the processed goods remain in the Netherlands for final consumption, an import flow of these goods had to be imputed (nr. 1).

Again, in a number of cases imported goods were wrongly categorized as re-exports instead of quasi-transit trade. This has of course implications for the registration of imports of goods as well. Some of these cases seem to be motivated by taking advantage of Dutch tax legislation and involve transfer pricing between affiliates: import prices were much lower than export prices. There was also a case of transfer pricing which was correctly categorized as re-exports. In that case (nr. 5), the import prices were adjusted to the level of the export prices to better reflect market values.

Another adjustment involved import values which included the value for licensing. This value was also reported in the International Trade in Services and was removed from the International Trade in Goods.

Table 5.29 Data validation on imports 2015, details

Nr	P38 code	Description	million euros	Reason corrections
1	P10-12	Food products, beverages and tobacco products	297	Processing
2	P19	Coke and refined petroleum products	-5.351	From re-exports to quasi-transit trade
3	P20	Chemicals and chemical products	-675	From re-exports to quasi-transit trade
4	P21	Basic pharmaceutical products and pharmaceutical preparations	-4.068	From re-exports to quasi-transit trade
5	P21	Basic pharmaceutical products and pharmaceutical preparations	425	Tranfer pricing
6	P26	Computer, electronic and optical products	-800	Correction for licensing
7		Various productgroups	110	Several reasons
Total, data validation			**-10.062**	

B. Conceptual adjustments

The main part of these adjustments refer to bridging the differences between the ESA 2010 change of ownership recording and the (FTS) cross border registration (irrespective of changes in ownership). The FTS figures have been adjusted for:

Merchanting

In the case of merchanting a resident merchant purchases goods from a non-resident and subsequently resells it to another non-resident, without the goods entering and leaving the economy of the merchant. Merchanting should be recorded as trade in goods according to ESA 2010, but since these goods do not actually cross the border they are not included in the FTS data.

Statistics Netherlands researched the best possible source for estimating merchanting activities (see annex 5.1, 5.2 and 5.5). Whereas the Structural Business Statistics (SBS) contain data on merchanting for wholesale trade (see annex 5.1 and 5.5), merchanting activities by other industries are not covered in SBS. For the other industries where merchanting activities are present, besides the wholesale trade, data from the International Trade in Services (ITS) is used.

The method applied and the results are described in annex 5.5.

Goods sent abroad for processing

Goods sent from the Netherlands to be processed abroad and goods sent abroad to be repaired are not regarded as foreign trade in goods in ESA 2010, since there is no change in ownership. Because these flows are included in the FTS data, they have to be removed. In principle this should be possible, using the information in FTS. The Nature of Transaction (NoT) codes 4 and 5 give information on goods sent abroad for processing. However, analysis of the data showed that it not possible to rely solely on the information from the NoT codes. In annex 5.1 the available sources were examined. It was found that the best way to estimate the processing fees was to combine SBS and Prodcom information. Of course estimating the processing fee is only the first step; to make the required adjustments to the FTS-data the flow of goods involved also has to be estimated, since these flows have to be deducted for the FTS data. The method applied is described in detail in annex 5.2[27]. Here only a brief description of the applied method is given:

Step one: estimating the processing fees.

[27] In the 2015-benchmark revision, the method for estimating flows of goods involved in processing by small and medium enterprises has been slightly revised from the method reported in annex 5.2. The revised method is described below under the heading 'Small and medium enterprises.'

SBS contains values for the import and export of industrial services by enterprises in the manufacturing industry. Industrial services consist not only of manufacturing services but also of repair, maintenance and installation services. To separate the manufacturing services from the other services, SBS data and Prodcom data were combined.

Prodcom contains a separate estimate of the sales of manufacturing services and of repair, maintenance and installation services. Using this information the share of manufacturing services in total sales of industrial services for each manufacturing industry was determined. Note that Prodcom only contains the value of total sales with no breakdown to domestic sales and exports. Therefore the shares could not be calculated for the export of manufacturing services separately. Furthermore, Prodcom only contains the value of the sales of manufacturing services. There is no information on the purchases of industrial services.

Because of these limitations, the shares of the sales of manufacturing services in total industrial services from Prodcom were used to calculate the value of import and export of manufacturing services in the SBS. This was done for each manufacturing industry, by multiplying the shares from the Prodcom with the value of imports and exports of industrial services in the SBS.

Prodcom, however, does not cover all industries. For those industries not covered by Prodcom (most notably wholesale trade), an estimate of the processing fee was made by applying the processing fee to total industrial activities ratio of related industries to the total industrial activities of those industries (in the SBS).

Step two: estimating flows of goods involved in processing

Different estimation methods for large enterprises (in terms of the values of processing fees) and small and medium enterprises (SME) were applied.

Large enterprises

For large enterprises the flows of goods involved were estimated by looking at the FTS data reported by the individual enterprises. Most of the enterprises that were identified as inward or outward processors in the SBS, did not report trade in the ITGS under NoT codes 4 and/or 5. Therefore, the NoT codes could not simply be used to estimate the values for the goods sent abroad for processing for these enterprises. Instead the values of the goods for processing are estimated as follows:

Inward processors:

The value of goods sent to the country of the owner after processing is assumed to be equal to the value of the outflow of goods reported in FTS. The value of the goods received from the owner before processing is then estimated by reducing the value of the outflow of goods in FTS with the value of the processing fee from the SBS.

There were a few exceptions to this procedure: for some inward processors the value of the inflow of goods was more than the outflow of goods minus the fee because a large part of the output was sold within the Netherlands. This part is imported (sold by the foreign owner to units in the Netherlands). The value of this part was estimated using the inflow and outflow values of these inward processors reported in FTS (and in one complicated case by its domestic sales figures in the SBS; this one was corrected under ‘Data validation’).

Also for one inward processor the value of the inflow of goods was less than the outflow of goods minus the fee because a large part of the inputs were not imported but were bought within the Netherlands. This part is exported (sold within the Netherlands to the foreign owner). The

value of this part was estimated using the inflow and outflow values of this inward processor reported in FTS.

Outward processors:

The value of the goods received from the country of the processor after processing is assumed to be equal to the value of the inflow of goods reported in FTS. The value of the goods sent abroad for processing is then estimated as the difference between the value of the inflow of goods in ITGS and the value of the processing fee derived from the SBS.

Small and medium enterprises

For SME adjustments are determined at industry level (at the NACE-level of the SUT, 4 digit NACE). The fees derived in step one are combined with FTS data.

The total adjustments on import and export of goods are determined by assuming that the value of the fee reported in SBS is more or less 20 per cent of the value of the gross flow of goods involved. For each industry, the commodities involved were derived from its supply and use data in the SBS.

The adjustments were made in such way that the trade balance in goods of commodities was decreased (inward processing) or increased (outward processing) by the same amount as the processing fee.

Other global production arrangements

In a number of cases Dutch companies outsource the manufacture of goods abroad, but they remain owner of the produced goods and the production process. These companies are regarded as domestic producers of goods (production abroad). The company abroad that manufactures the goods is regarded as a provider of industrial services. This company will receive a payment for services rendered and is judged not to be the economic owner of the goods produced. Since the goods are not physically produced in the Netherlands, flows of goods have to be imputed (imports of raw materials and exports of finished goods) on FTS-data. The method applied is described in annexes 5.2 and 5.3.

For one large company involved in production abroad a different method was used. This company adds intellectual property and other services to either the physically complete product or to the ready components, which it assembles into the complete product. The value of the export of goods of this company is derived by taking its value of production abroad from the SBS and deduct from it first the value of exported services as reported in the International Trade in Services statistics and then an estimate for domestic sales. The value of the import of goods is found in the SBS as its use of goods for production abroad.

Goods returned to sender

These goods are included in FTS but have to be removed (no change in ownership). Information is available in FTS on basis of which these flows are removed.

Goods procured in ports by carriers

These goods are only partially recorded in FTS (only part of the exports), but do belong to international trade according to ESA 2010. The biggest part of these goods concerns fuel. A

smaller part is catering for passengers flights and victualing supplies for ships, etc. Several sources are used and combined for this estimate:

- Dutch energy balance sheet (NEH)
- SBS for transport (shipping industry, aviation, road transport)
- International trade in goods
- Aviation, passengers transport on Dutch airports
- Amsterdam Schiphol Airport-Aviation Statistics and forecasts.

The last conceptual adjustment refers to the cif/fob-adjustment and -reclassification (only imports).

Table 5.30 Conceptual adjustments by type, 2015

	Imports	Exports
Merchanting	--	15.348
Goods sent abroad for processing	-26.793	-31.931
Other global production	17.036	33.425
Goods returned to senders	-3.129	-3.129
Goods procured in ports by carriers	3.373	988
Cif/Fob adjustment and reclassification	-5.903	--
Total value	**-15.416**	**14.701**

C. Exhaustiveness

Estimates for exhaustiveness have been made for two subjects:

- Illegal transactions
- Online (internet) sales

Illegal transactions

The import and export connected with illegal transactions concerns production of and trade in cannabis and XTC, trade in heroin and cocaine and smuggling of cigarettes.

Estimates made for illegal transactions are further explained in section 7.2.3.2.

Internet sales

An estimate for online trade (internet sales by Dutch web shops to non-resident purchasers and internet purchases by Dutch residents in foreign web shops) is made. A large part of *online trade* is included in FTS, but not all. Business-to-business sales are fully included, both inside and outside the EU. Business-to-consumer sales outside the EU are fully included, but inside the EU it is only partially included in FTS. The estimated values of the missing parts are 404 (export) and 873 million (import).

These estimates are based on 1) up-to-date data on the growth and level of *total* internet sales and 2) data on exported and imported values *by commodity* found in 2010.

1) The up-to-date data on total internet sales are taken from an ongoing study by Statistics Netherlands, the University of Amsterdam and Leiden University. To measure expenditure on non-Dutch webshops located in the EU, Statistics Netherlands (CBS) uses the Dutch VAT

returns filed by foreign EU retailers. To identify webshops among these VAT returns, Dutch Chamber of Commerce registrations are used of around 90 million European companies. The registrations include approximately 3 million foreign EU retail businesses, among which are the foreign EU webshops.

Linking the Chamber of Commerce registrations from elsewhere in Europe to the Dutch VAT returns is done by company name; however, a company may be represented under different names in these two sources (e.g. LTD versus LIMITED, differences in punctuation marks, etc.). Moreover, comparing the names takes up a great deal of calculation time in such large datasets. CBS together with the University of Amsterdam and Leiden University implemented existing advanced research techniques in order to achieve both faster and more accurate linking.

To check the results from this linking process, verification takes place in two steps. First, internet data are collected by webscraping to check for websites of these shops through which products can be ordered online. Webpages are found on the basis of the company name, after which the pages are checked for the display of a shopping cart.

The next step is manual checking for webshop features in the websites of the largest foreign companies in terms of turnover size in the Netherlands. The product group related to these webshops is established with certainty. Through these manual checks, a rough estimate can be made of measurement errors in the appropriate algorithm. The resulting margin of error in item turnover is set at approximately 5 percent. With the help of manual check results, the next version of the algorithms can be 'trained' using machine learning in order to further reduce measurement errors.

2) For the 2010-estimation of the missing part of the internet sales of Dutch companies to non-resident consumers in the EU by commodity two sources are used:

- The value added tax declaration (VAT). In this tax declaration a specific question about internet sales to consumers in included. However, since there are also some other sales included in this question (for example sales to companies that are exempted from charging VAT over their products and turnover from repair and installation activities), adjustments have to be made. Based on examining of NACE codes and their specific activities, those companies are selected which are not involved in repair/installation activities and sell to consumers and not to other companies.
- FTS. The value of exports of those companies that have been selected from their VAT-declaration is compared with their FTS declaration. If the FTS-value is lower than the value from the tax declaration, it is assumed that part of the internet sales is missing from FTS, and an additional estimate is made.

The 2010-estimation of missed internet purchases of Dutch consumers abroad by commodity, is based on two sources:

The 2011 results of the survey by Statistics Netherlands "Use of ICT by private persons" includes questions on online purchases. This survey assists in estimating the number of people buying goods on the internet and the value of these purchases.

A survey on internet sales of Dutch consumers in the Netherlands was conducted by a private research institute (Blauw Research) on the request of Thuiswinkel.org (a branch organisation for Dutch internet sale companies). This survey was used:

- to split the value of purchases in those from Dutch internet shops and those from non-resident internet shops.
- to calculate the value for 2010 (the ICT-use survey started in 2011).

- to allocate the total value of the purchases to the product classification of the SUT.

Table 5.31 Estimates for exhaustiveness, 2015

	Import	Export
Illegal transactions	919	4.100
Missed online trade	873	404
Total	**1.792**	**4.504**

5.15 Exports and import of services

5.15.1 Summary and process table

This section gives a summary of the process table for the exports and imports of services and a short explanation of the different parts of the process table. A more detailed elaboration (on sources, estimation methods, etc.) is given in section 5.15.2 and further.

Table 5.32 Process table of exports of services, 2015

	Basis for national accounts figures					
	Surv and Censuses	Admin records	Combined data	Extrapol + models	Other	Total
	(1)	(2)	(3)	(4)	(5)	(6)
	million euro					
Exports of Services	166597	0	0	3476	0	170073
Of which:						
Intra-EU	92674					
Extra-EU	73923					

	Basis (Total)	Adjustments				Final estimate
		Data val.	Concept.	Exhaust.	Balancing	
	(6)	(7)	(8)	(9)	(10)	(11)
	million euro					
Exports of Services	170073	-15575	-444	294	-2369	151980
Of which:						
Intra-EU						84543
Extra-EU						67437

Table 5.33 Process table of imports of services, 2015

	Basis for national accounts figures					
	Surv and Censuses	Admin records	Combined data	Extrapol + models	Other	Total
	(1)	(2)	(3)	(4)	(5)	(6)
	million euro					
Imports of Services	149768	0	0	5514	0	155282
Of which:						
Intra-EU	65955					
Extra-EU	83813					

	Basis (Total)	Adjustments				Final estimate
		Data val.	Concept.	Exhaust.	Balancing	
	(6)	(7)	(8)	(9)	(10)	(11)
	million euro					
Imports of Services	155282	10946	-44	292	-808	165668
Of which:						
Intra-EU						72957
Extra-EU						92711

(1) Surveys & censuses

This figure is mainly based on the International Trade in Services Statistics (ITS) conducted by Statistics Netherlands This survey fully meets the requirements of ESA 2010.

A second source statistic used, concerns the imports and exports of services by SPE's. These data are obtained from the Dutch Central Bank (DNB).

The Split between Intra- and extra-EU trade is available in the ITS. However this distinction is not made in the supply- and use tables. Therefore the intra/extra EU distribution from the ITS is also applied to the final estimates in column 11.

(4) Extrapolations and models

Table 5.34 Extrapolations and models 2015, details

	Benchm. Extrap.	Comm. Flow method	CFC (PIM)	Dwellings stratif. Method	FISIM / Spreads	Other extrap & models	Total extrap & models
							(4)
	million euro						
Exports of Services	0	0	0	0	3476	0	3476

	Benchm. Extrap.	Comm. Flow method	CFC (PIM)	Dwellings stratif. Method	FISIM / Spreads	Other extrap & models	Total extrap & models
							(4)
	million euro						
Imports of Services	0	0	0	0	5394	120	5514

The exports and import of FISIM and Buying and selling spreads is calculated using models. FISIM and Buying and selling spreads are calculated by Statistics Netherlands, combining information from statistics Netherlands and the Dutch Central Bank (DNB); see section 3.18 for detailed information on the calculation of exports of FISIM and spreads.

For the imports of financial services by households of estimation of 120 million was made.

(7) Data validation

This column contains a number of specific adjustments made by the national accounts department. Because information from several statistical sources is combined at the NA-department, inconsistencies that did not become apparent in an earlier stage become visible. See section 5.15.5 for more details.

(8) Conceptual adjustments

Imports and exports of transport by pipeline have been removed.

(9) Exhaustiveness

Under exhaustiveness estimates are reported due to the inclusion of illegal activities (N2), and of Airbnb-type rental activities (N3), the estimation of some missing transactions in the ITS survey concerning online trade and financial services (fees and commissions) paid by households (N7) and the elimination of the VAT gap (N9).

(10) Balancing

The adjustments in this column are the result of balancing the supply and use table.

5.15.2 Supply and use table

Imports and exports of services both comprise about 8 per cent of total supply and use respectively. In contrast to the international trade in goods no distinction is made in the supply and use tables between imports and exports from/to countries of the European Union and imports/exports from/to third countries.

International trade services statistics (ITS) are the major source for data on imports and exports of services in the national accounts. ITS is compiled by the international trade statistics department of Statistics Netherlands. Section 5.15.3 describes the compilation process of ITS in more detail. ITS is mainly based on a survey by Statistics Netherlands. Besides that survey a number of supplementary sources are used.

5.15.3 Source data for the supply and use data

The main source for the imports and exports of services in the SUT is the quarterly International Trade in Services statistic (ITS) compiled by Statistics Netherlands. For the compilation of this statistic several sources are used. The most important source is the ITS-survey conducted by Statistics Netherlands. Next to this survey, for a number of services not (completely) covered in the ITS-survey several sources are combined.

I - The ITS-survey

The survey consists of two parts: a census for the 400 largest enterprise groups and a sample survey of 5000 units for small and medium sized enterprises. For the sample selection new information from the tax authorities (VAT EU Recapitulative Statement) led to a better coverage of companies engaged in the trade of international services. This information is also used to validate the survey results.

The large enterprise groups provide the most detailed information. This part of the survey comprises 70 service categories, imports and exports, and a geographical breakdown to 250 countries. The small and medium sized enterprises receive a questionnaire with a less detailed breakdown of about 55 services categories. Plausibility checks are based on time-series data comparisons and VAT-data. In case of non-response the enterprise gets an imputed value based on figures from earlier quarters. See section 10.3 for the questionnaire of the ITS survey.

The stratification of the small and medium sized enterprises sample is based on economic activity of the enterprise (Nace-class), size class labour and the propensity being involved in import or export of services. Using these characteristics, response is grossed up to total population estimates.

II – Combined sources for specific service categories

For the following service categories sources other than the ITS-survey are used and combined:

A. Travel
B. Insurance services
C. Financial services
D. Government services

A. Travel

Travel services consist of several components as can be seen in table 5.35. This table shows the results for 2015.

Table 5.35 Imports and exports of travel, million euros, 2015

	Import	Export	Balance
1. Personal travel	14410	7936	-6474
Of which:			
a. Personal travel: health-related expenditures	610	76	-535
b. Personal travel: education-related expenditures	486	587	101
c. Personal travel: travel-related and recreational expenditures	13313	7273	-6040
2. Business travel	2691	3978	1287
Of which:			
a. Business travel: border, seasonal, and other short term workers	98	1012	914
b. Business travel: other	2593	2966	373
Total travel services	17101	11914	-5187

1a. Health related expenditures

For healthcare-related expenditures data from an external source is used, the Care Institute Netherlands (Zorginstituut Nederland). The Care Institute is an independent government organization. It advices the ministry of health, promotes the quality of health care ensures that the health care is accessible to all Dutch residents, regardless their medical condition.

1b. Education related expenditures

For inbound as well as outbound education related travel information from NUFFIC is used. NUFFIC is a non-profit organisation promoting the internationalisation of higher education. NUFFIC publishes data on number of students and average spending of students during their stay.

1c. Expenditures during holidays and one-day trips

Outbound travel is based on the results of the Continuous Holiday Survey (CVO) conducted by NBTC-NIPO Research.

Inbound travel is based on sample data from Accommodation Statistics (SLA - conducted by Statistics Netherlands). Extra estimates are made for accommodations not covered by the SLA (like for example Airbnb-type accommodations); see par. 7.2.3.3. For the estimate of inbound one-day trips information from NBTC is used.

2a. Border, seasonal and other short-term workers.

Inbound: This item is estimated by combining information form the Migrantenmonitor 2014-2015 (Migrants monitor 2014-2015) compiled by Statistics Netherlands with information from external sources (reports, information from partner countries, etc.). Outbound: estimated with external information on the number of Dutch residents working abroad, combined with an estimate of daily expenditures.

2b. Expenditures during business trips.

Inbound business travel is based on sample data from Accommodation Statistics (SLA-conducted by Statistics Netherlands).

Outbound travel is based on a household survey called "Continu Zakenreis Onderzoek" – CZO (Continuing Business travel Survey). This survey is conducted by NBTC-NIPO research.

B. Insurance services

For the calculation of *exports of insurance services* information on the production of insurance services (see section 3.18) is combined with ratio of insurance premiums received by Dutch insurance companies from resident versus non-resident policy holders. DNB collects this information by surveying, but also has direct access to this information because insurance companies and pension funds are under supervision of DNB.

For *import of insurance services* no information from DNB is available. Alternatively information is available from the ITS-survey on the premiums paid by Dutch companies to foreign insurance companies. Under the assumption that the ratio service/premium as calculated for Dutch insurance companies is also valid for foreign insurance companies, the import of insurance services is calculated.

C. Financial services

Available data sources are:

- Data on imports and exports of financial services by monetary financial institutions (MFI's). These data are obtained from a survey conducted by DNB.
- Data from the ITS-survey on the imports and exports of financial services by non-financial corporations and financial auxiliaries.

D. Government services

For figures on government services n.i.e. data on perception costs that Dutch government obtains for the collection of European customs and agricultural levies and data on spending by international organizations in the Netherlands are used.

5.15.4 Processing for national accounts

Different statistics use different classifications. The supply and use table classification is based on the CPA/CPC-classifications. The classification of the ITS-survey is EBOPS (Extended Balance of Payments Services Classification) based. The link between both classifications can be found in the MSITS-manual, see:

http://unstats.un.org/unsd/tradeserv/TFSITS/msits2010/docs/MSITS%202010%20M86%20(E)%20web.pdf

The EBOPS based service classification used in ITS had to be linked to the goods and services classification used in the supply use table. As the SUT-classification is more detailed than the ITS-classification, the latter has to be split in most cases (sometimes there is a one-to-one link between an ITS and an SUT category). The NACE-code of the individual responding companies was used to decide to which SUT-services an ITS-service should be allocated. Section 9.3 shows the link between ITS an NA categories in detail.

5.15.5 Adjustments made by the national accounts department

In this section the adjustments made by the national accounts department are discussed, following the ordering in the process table.

(4) Extrapolations and models

In this column FISIM and Buying and selling spreads are recorded. The value of FISIM and the allocation over sectors is estimated with use of data from DNB and Statistics Netherlands (balance sheet stocks, interest rates and reference interest rate). A detailed explanation of the calculation of FISIM and buying and selling spreads is found in section 3.18.

The value of imports and exports of FISIM is respectively 4721 million euros and 2425 million euros; imports and exports of buying and selling spreads amount to 673 and 1051 million euros respectively.

(7) Data validation

This column contains adjustments addressing specific companies which are made by the national accounts department. Because information from several statistical sources is combined at the NA-department, inconsistencies that did not become apparent in an earlier stage become visible.

Special attention has been given to transport services. Due to the cif/fob registration of imports and exports of goods double counting of transport services may occur. Besides that, because of the nature of the ITS-survey transport services that should be included in the import or export may be missed.

The data valuation on imports (10.946 million euros) was almost entirely caused by corrections made for three large companies. For one company a reconsideration was made for a large international transaction. This transaction was initially considered to refer to the purchase of non-produced intangible assets (brand names). Further investigation showed that the transaction mainly involved a purchase of R&D. This reconsideration led to an upward adjustment of gross fixed capital formation and of imports of services by almost 29 billion. For the same reason exports was adjusted upwards by almost 11 billion. For the second company it was decided, after consulting Eurostat, not to report large royalty flows as imports and export of services but as financial flows, leading to a downward adjustment of imports (and exports) of 15 billion euros. In case of the third company is was decided to record a large re-invoice flow net instead of gross (downward adjustment of imports and exports of almost 3 billion euros).

Data valuation on export (-15.575 million euros) was, next to adjustment for the three large companies described above, also caused by a large number of smaller adjustments.

(8) Conceptual adjustments

Transport by pipeline

The figures for transport by pipeline have been removed, because the foreign part of the pipeline construction is not considered as a resident unit and the domestic part is by definition a resident unit (see ESA 2.29 and 18.17). The values of imports and exports that have been removed are 44 and 444 million euros respectively.

(9) Exhaustiveness

Table 5.36 Estimates for exhaustiveness 2015, details

	N1	N2	N3	N4	N5	N6	N7	N8	Total exhaust
									(9)
	million euro								
Exports of Services		280	0	0	0	-52	66	0	294

	N1	N2	N3	N4	N5	N6	N7	N8	Total exhaust
									(9)
	million euro								
Imports of Services	0	237	10	0	0	0	45	0	292

N2-Illegal transactions

The exports concern estimates for fencing, the imports for illegal gambling (138 million) and prostitution (99 million). More information on the estimates for illegal transactions can be found in section 7.2.3.2.

N3- Rental activities of households

This concerns the rental of private houses and apartments using Airbnb-type intermediation. The imports concern mediation fees paid by landlords and tenants- see section 7.2.3.3.

N6 – Elimination of the VAT gap.

See section 7.2.3.5 for further explanation.

N7 – Missing in ITS

This concerns estimates for online trade (import and export) of electronic services and an estimate of the imports of financial services by households.

Online trade

Export of electronic services is not covered by the ITS-survey as companies that deliver e-services are not included in the target population. Therefore an estimate was made for the 2010 benchmark revision using information from the survey 'Use of ICT by companies'. For the year 2015 this figure has been updated using the ratio of the production value for 2015/production value 2010 of the services involved. The estimated export value for 2015 is 66 million (44 million in 2010).

Import of electronic services by companies is reported in the ITS survey. Because the ITS survey is a business survey, import of services by consumers is not covered. Therefore an estimate was made for the 2010 benchmark revision using information from the survey 'Use of ICT by persons'. For the year 2015 this figure has been updated using the ratio of the

consumption value for 2015/consumption value 2010 of the services involved. The estimated import value for 2015 is 45 million (40 million in 2010).

(10) Balancing

The adjustments in this column are the result of balancing the supply and use table.

CHAPTER 6 THE BALANCING OR BALANCING PROCEDURE, AND VALIDATING THE ESTIMATES

6.1 GDP balancing procedure

6.1.1 Introduction

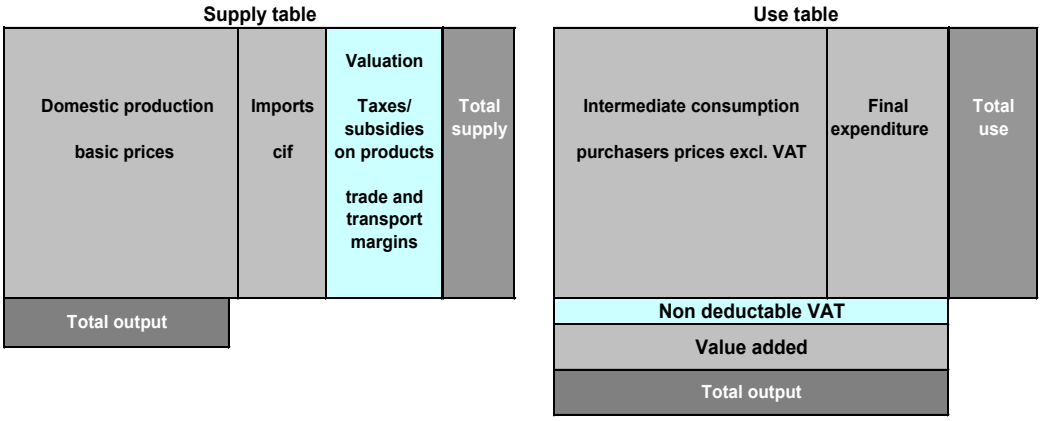
In the Netherlands, use of a balancing framework for estimating GDP and its components the goes back to the fifties. Starting with current price industry by industry IO-tables, from 1980 onwards, the compilation of I/O tables in previous years' prices, simultaneously with tables in current prices, became standard procedure. In the early eighties, it was decided to set up a new balancing system, based upon supply and use tables in both current prices and volume terms. Reasons for this change were, among others, the SNA and ESA propagating the supply use system as standard for estimating GDP and the increasing heterogeneity of industry output. Unlike I/O tables, supply and use table tables (SUTs) allow for direct and optimal use of available sources. After all business statistics, foreign trade statistics and investment statistics all contain product information. Besides numerous data improvements the 1987 benchmark revision of the Dutch national accounts therefore led to the introduction of the SUT as the core framework for estimating GDP and its components both from an expenditure and production point of view. At that time the SUTs were compiled at the level of detail of 250 industries and 800 products.

The introduction of SUT's can be said to have improved the quality of the national accounts, particularly by establishing a direct and loser link between the macro data (SUT) and business and price statistics.

6.1.2 Supply and use tables

In the Netherlands the SUT is balanced at purchasers' prices excluding value added tax (VAT). Output in the supply table is valued at basic prices, imports at c.i.f. prices. The use table is valued at purchasers' prices excluding VAT with a separate row for non-deductible VAT. On the product level the gap between the basic prices of the supply table and purchasers' prices excluding VAT of the use table is bridged by adding columns for taxes and subsidies on products and trade and transport margins to the supply table. See figure 6.1 for a schematic overview.

Figure 6.1 Schematic overview of the supply and use table in the Netherlands



Tables 6.1 and 6.2 show an aggregated version of the SUT for 2015

Table 6.1. Supply table, 2015

		A	B	C	D	E	F	G-I	J	K	L	M-N	O-Q	R-U	Other not imputed activities	Total AU	Imports of goods	Imports of services	Supply at basic prices	Trade and transport margins	Taxes on products (including VAT)	Subsidies on products (–)	Total
		current prices at million euros																					
A	Agriculture, forestry and fishing	27298	–	148	–	–	–	–	–	–	–	8	–	–	–	27454	19876	–	47330	9640	770	–	57740
B	Mining and quarrying	–	17469	199	–	181	8	1	–	–	–	1023	1	–	–	18882	34296	1498	54676	2254	4104	–	61034
C	Manufacturing	432	129	277948	25	2118	1113	5927	253	–	–	1281	8	23	–	289257	299347	3852	592456	113157	33729	–	739342
D	Electricity and gas supply	417	4	125	13721	261	–	11	–	–	–	–	–	–	–	14539	857	–	15396	974	2854	692	18532
E	Water supply and waste management	–	2	393	12	7238	33	2271	4	–	–	–	3638	27	–	13618	2651	272	16541	122	672	–	17335
F	Construction	124	–	14	2210	–	82318	410	181	–	694	709	899	–	–	87559	–	2597	90156	–	7531	26	97661
G-I	Trade, transport, hotels, catering	389	350	40	–	–	86	95068	–	–	1647	2357	1619	1194	–	102750	–	19793	122543	–	3555	–	126098
J	Information and communication	–	26	4615	133	39	142	4008	49853	1099	53	5520	1729	428	–	67645	1499	9571	78715	2330	3667	–	84712
K	Financial and insurance activities	–	–	–	–	–	–	–	–	75183	123	119	–	10	–	75435	–	9874	85309	–	2375	–	87684
L	Real estate activities	677	1	306	–	24	171	1527	51	1912	81144	714	1565	178	–	88270	–	29	88299	–	394	5	88688
M-N	Business services	339	495	7472	218	229	574	14641	9913	8476	364	148113	6105	1925	–	198864	7	95483	294354	–	8708	–	303062
O-Q	Government and care	164	–	2311	4	–	–	1602	340	223	10	463	179493	610	–	185220	–	144	185364	–	382	–	185746
R-U	Culture, recreation, other services	2	–	4	–	–	–	1104	307	–	–	314	629	23312	–	25672	296	660	26628	79	1155	–	27862
	Not imputed goods and services	1	–	2493	–	–	–	12841	–	–	–	1	–	–	1462	16798	–	16633	33431	–	–	–	33431
	Trade and transport margins	516	398	7176	1536	77	395	112602	1526	–	154	2360	–	153	–	126893	–	1663	128556	-128556	–	–	–
	Cif/fob-adjustment and reclassification	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	-5903	–	-5903	–	–	–	-5903
	Cif/fob-reclassification	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	3599	3599	–	–	–	3599
	Supply at basic prices	30359	18874	303244	17859	10167	84840	252013	62428	86893	84189	162982	195686	27860	1462	1338856	352926	165668	1857450	–	69896	723	1926623

Table 6.2. Use table, 2015

		A	B	C	D	E	F	G-I	J	K	L	M-N	O-Q	R-U	Other not imputed activities	Total AU	Exports of goods	Exports of services	Final consumption households incl. NPISHs	Final consumption general government	Gross fixed capital formation	Consumption residents in rest of the world	Total
		current prices at million euros																					
A	Agriculture, forestry and fishing	5531	–	18794	–	–	126	663	–	–	2	246	496	54	127	26039	24761	12	6580	–	348	–	57740
B	Mining and quarrying	838	1525	24547	3572	44	1020	736	32	47	81	221	729	296	6	33694	15657	5700	5328	34	621	–	61034
C	Manufacturing	7820	671	130488	969	1227	25069	24171	4787	652	2363	6585	13021	2548	1301	221672	354402	7026	111998	5708	38536	–	739342
D	Electricity and gas supply	438	1290	2400	2232	138	115	1972	227	141	244	365	1127	553	–	11242	1904	–	5264	12	110	–	18532
E	Water supply and waste management	355	17	1622	41	2677	63	424	59	84	68	339	1532	119	–	7400	4445	348	2729	2434	-21	–	17335
F	Construction	356	415	547	1055	82	22286	1276	544	68	10750	1064	4951	226	–	43620	–	3087	118	461	50375	–	97661
G-I	Trade, transport, hotels, catering	418	322	7292	230	520	545	34699	973	637	231	4705	3300	509	–	54381	–	32726	38124	867	–	–	126098
J	Information and communication	176	86	2588	188	121	815	5360	11755	2470	711	7312	4995	1029	28	37634	1791	14133	12418	365	18371	–	84712
K	Financial and insurance activities	380	246	4018	253	182	989	4146	858	18580	24789	2807	3340	650	–	61238	–	5992	19944	–	510	–	87684
L	Real estate activities	559	48	2133	130	115	766	9890	999	1004	1912	3170	2847	685	–	24258	–	27	59584	3361	1458	–	88688
M-N	Business services	1400	1623	32544	1068	793	5468	39650	11421	9693	3183	43747	19458	3545	–	173593	–	71577	12761	981	44150	–	303062
O-Q	Government and care	93	35	786	263	41	284	1079	418	570	114	1099	6434	283	–	11499	–	872	17043	155968	364	–	185746
R-U	Culture, recreation, other services	78	25	490	19	45	118	912	757	208	192	795	1372	2539	–	7550	77	717	17098	2163	257	–	27862
	Not imputed goods and services	19	2	462	22	10	782	966	129	245	45	953	448	118	–	4201	15336	–	–	–	–	13894	33431
	Total intermediate consumption	18461	6305	228711	10042	5995	58446	125944	32959	34399	44685	73408	64050	13154	1462	718021	418373	142217	308989	172354	155079	13894	1928927
	Other taxes on production	351	11	470	126	49	139	1251	77	1068	3831	740	1307	114	–	9534	–	–	–	–	–	–	9534
	Other subsidies on production (-)	1077	5	704	10	99	79	1488	288	34	21	1675	1988	449	–	7917	–	–	–	–	–	–	7917
	Wages and salaries	2421	923	30738	1603	1413	12417	52807	12558	14131	2671	46936	75056	7016	–	260690	–	–	–	–	–	–	260690
	Employers' social contributions	617	317	8078	378	399	3638	12994	2897	3704	791	11079	23034	1651	–	69577	–	–	–	–	–	–	69577
	Consumption of fixed capital	4030	2044	14187	3518	1319	2515	15399	6050	4261	25852	9467	25362	1738	–	115742	–	–	–	–	–	–	115742
	Operating surplus (net)	5556	9279	21764	2202	1091	7764	45106	8175	29364	6380	23027	8865	4636	–	173209	–	–	–	–	–	–	173209
	Value added at basic prices	11898	12569	74533	7817	4172	26394	126069	29469	52494	39504	89574	131636	14706	–	620835	–	–	–	–	–	–	620835
	Consumption non-residents in the Nethe	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	12067	-12067	–	–	–	–
	Consumption residents in the rest of the	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	13894	–	–	-13894	–
	Cif/fob-adjustment	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	-2304	–	–	–	–	-2304
	Use at purchasers' prices	30359	18874	303244	17859	10167	84840	252013	62428	86893	84189	162982	195686	27860	1462	1338856	418373	151980	310816	172354	155079	–	2547458

In the Dutch national accounts the SUT's are balanced simultaneously in current prices and volume terms.

6.1.2.1 Classification of industries and products in the SUT

The industry and product classifications currently applied in the Dutch SUTs are a compromise between detail and overview. Nowadays the classification of the Dutch SUT for the final annual estimate amounts to 653 rows (621 products and 32 value added components) and 198 columns (142 industries, 30 expenditure categories, 21 types of taxes and subsidies on products and 5 types of trade and transport margins).

The number of products is based on the following criteria:

- a link with international product classifications (HN for international trade data and CPA for European data dissemination);
- homogeneity of Value Added Tax rates and other taxes and subsidies on products;
- availability of sufficiently reliable data;
- sufficient 'magnitude';
- homogeneity of price changes;
- homogeneity of destination (intermediate consumption or final expenditure).

The reasoning behind these criteria is mostly self-evident. The European Union is an important user of NA-data. Data have to be transmitted in conformity with the transmission program based on standardised classifications of the European Union. In addition, national accounts data are used for determining the member state contributions to the own resources of the European Union based on VAT. This explains the relevance of sufficiently detail in products in relation to VAT.

The need of good quality data and sufficient detail with respect to products is self-evident. However, the issue of data needs and requirements is in fact more 'subtle'. Like in most

countries, also in the Netherlands, the level of detail in data sources divert when looking at the various components of supply and use. For example, information on output and foreign trade in goods is available at much higher level of detail than most use-side data. The 'Other costs' item in company's profit and loss accounts and business surveys is a typical example of insufficient detail for estimating intermediate consumption at the required product breakdown of the SUT. Nevertheless this higher level of detail in the SUT is necessary to facilitate the balancing process in order to get high quality GDP-estimates.

The total number of industries is based on the following criteria:

- link to international classifications (NACE.rev.2);
- homogeneous output and input structure;
- availability of sufficiently reliable data;
- sufficient 'magnitude'; data availability;
- homogeneous with respect to market – non-market output
- homogeneous with respect to VAT rates.

6.1.2.2 Sources and units

The source data for the SUT-estimates are mainly so called 'institutional statistics' meaning that the data on production and intermediate consumption of goods and services are strictly linked to the units of observation as defined in the statistical business register. In contrast to the institutional approach are so called 'functional' data, which are linked to products, irrespective of their producers or users.

The units of observation are kind-of-activity units (KAU's) or as close as possible approximations to the KAU. Large enterprises are split up into KAU's. This implies that from the point of view of production, the units of observation are as homogenous as possible. However, there are still a considerable number of secondary products next to the main output, as is shown by the 'off-diagonal' entries in the supply table.

6.1.2.3 Working procedures

Statistics Netherlands' working procedures for the compilation of supply and use tables can be summed up chronologically in a column - row - column process. At the end the estimates are approved in a final check in which the results are discussed in a small forum of experts.

A. Columns: specialists' input

Estimated derived from source statistics are made exhaustive and consistent with the level of detail required in the SUT. This is done by national accounts experts in specific fields (in the Dutch department of NA known as branch and expenditure specialists). Each specialist is responsible for the estimates of a particular group of industries or specific selection of final expenditure categories. They are responsible for making adjustments in order to assure the estimates to comply with national accounts definitions and for adding estimates with respect to exhaustiveness. Specialists are also responsible for supplementary estimates in cases when source statistics are not available at required levels of detail. An example is the breakdown of items such 'Other products' and 'Other costs' found in business surveys.

The main source for estimates of output of manufacturing, energy, construction, trade and transport, business services and part of personal services are annual business statistics (see chapter 3). In combination with the Prodcom statistics detailed product information on turnover can be derived for manufacturing. The level of detail of intermediate consumption varies considerably between activities, with manufacturing being covered in much greater detail than most other industries.

Those parts of the economy not covered by annual statistics are estimated by alternative sources and methods - for example using data on employment and the compensation of employees, information from professional associations (see chapter 3), annual reports or combinations of these.

Estimates for agriculture are based on quantity and price data. As a consequence of European agricultural policy, quantity and price data are available in great detail.

Imports and exports of goods have to be transformed from the observed cross border registration to the change of ownership in conformity with ESA 2010 definitions. This implies that alternative estimates are necessary e.g. for goods sent abroad for processing (to be excluded), merchanting (to be included) and production abroad (to be included). International trade in services data must be brought in line with the data on trade in goods.

Data on gross fixed capital formation can be derived from the survey on gross fixed capital formation. The delineation with intermediate consumption is a point of attention when making the estimates for the SUT. Estimates for changes in inventories are derived from business surveys.

The household budget surveys and retail trade statistics are important sources for estimates of final consumption of households.

As the SUT is balanced simultaneously in current prices and volume terms, production intermediate consumption and final expenditure output and input have to be deflated separately by applying producers prices for output and export (PPI's), consumer price indices (CPI's), and prices indices for services. In a number of cases where price indices are not available, volume indicators are used; examples are FISIM, health and education.

In the annual production process of SUT's volume term estimates are made and simultaneously balanced with current price data. For a benchmark year only current price estimates are made as no comparable T-1-data are available and thus no meaningful volume changes can be compiled.

This first step (A) leads to ESA 2010 compliant estimates for all column entries of the SUT at the required product level. At the end of this 'column-process' the data are transferred to the balancing system (iAGT).

B. Rows: balancing process

At the start of the balancing process, the balancing system contains a full product and industry -level description of the year to be estimated both in prices of the current and previous year. The dataset also includes balanced current price estimates of the previous year. When entering the balancing system the identity total output equals total input is already fulfilled as gross operating surplus is calculated as a residual item.

In this stage the balancing process therefore implies the balancing of the rows (products) of the supply and use tables simultaneously in current prices and volume terms. The balancing is partly done manually and partly automatically by a "balancing machine".

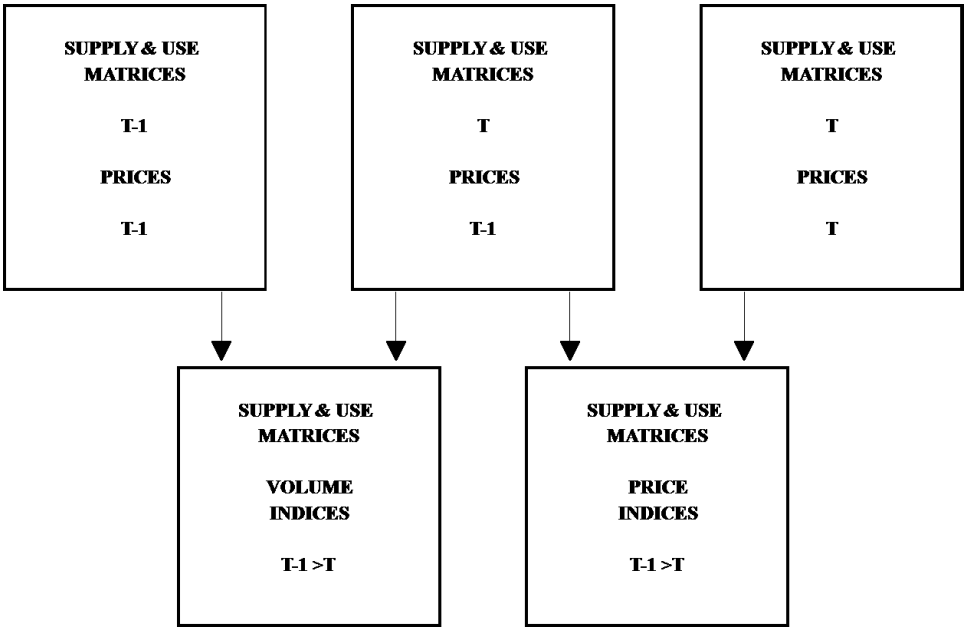
The first step in the process is determining which products should be balanced manually. These products are assigned to a staff member, who has (apart from process managers) the sole authority to alter the data relating to these product groups. The main criteria for balancing a product manually are:

- Large relative discrepancy between demand and supply either in current or constant prices
- Large absolute discrepancy between demand and supply either in current or constant prices
- Large price differences between supply and demand
- Excess of demand (supply) of a product and an excess of supply (demand) in strongly related products.

Whether a difference is considered "large" depends on the type of product, the quality of the data sources and the number of supplying and using industries and expenditure categories. For example supply and demand of manufactured products are much more volatile than supply and demand of most services. For services, a discrepancy will therefore sooner be considered "large" than for manufactured products. Also, for some products, like paper or postal services, the intermediate use is derived from survey questions concerning aggregates of expenses like "office needs' and "other expenses", which cover many products. Therefore, discrepancies can be caused by the fact that the breakdown of such aggregates into sets of products with a similar, general use may initially be wrong and differ from year to year. With this knowledge these sets of products can be balanced automatically more easily than singular products inside these sets.

Subsequently the selected products are balanced manually. Discrepancies between estimates of the supply and use of products are resolved by adjusting elements in either the use or supply table. If a current price figure is adjusted, the consequences for the corresponding values in prices of the previous year and the volume and price indices are examined. A similar procedure takes place in the event of adjustment of volume estimates. This enables the possibility to judge proposed adjustments on plausibility.

Figure 6.2 Simultaneous balancing of a supply and use table



The simultaneous balancing of current and volume term data makes it possible to analyse consequences of adjustments on operating surplus and volume change of output in relation to intermediate consumption and value added at the same time; Similar judgements can be made for adjustments in final demand. If, according to the 'specialists', adjustments on value added or final demand in either current prices or volume give implausible results, it will be rejected and alternative resolutions for the discrepancy have to be found.

Products that are balanced manually do not necessarily have to be balanced completely. Errors and large problems should be solved, until a minor discrepancy remains which can be resolved using automated balancing. For instance, when an exceptional price change is encountered for a specific user (industry or final expenditure) it is often sufficient to solve only this problem. The remaining inconsistencies in current and constant prices can be resolved automatically.

For the final annual estimate, generally about one third of all products is (partly) balanced manually. The other two thirds and the remaining differences for products that are partly balanced manually, are resolved automatically with the balancing machine.

The balancing machine allows automatic balancing of rows of the SUT. This facility is mainly used to balance minor discrepancies, since the large discrepancies are already solved manually. The balancing machine uses a quadratic optimisation procedure. Apart from the data to be balanced, the program includes:

- A weight per variable: The weights are based on the quality of the used data sources and determine how much each variable can be altered relatively to others. It is also possible to make a variable "exogenous", meaning that it cannot be adjusted in the balancing process at all.
- The balancing method assures that general constraints like supply equals demand for each product, or output of an industry equals intermediate consumption plus value added are fulfilled. A further example is a constraint whether variable is allowed to have negative (or positive) values. These types of constraints have to be fulfilled exactly and are called "hard constraints".
- Specific hard constraints: Examples are constraints that for non-market industries the net operating surplus must be zero or that the supply of a product by a specific industry must equal the demand by another specific industry.
- General "soft" constraints: Soft constraints are constraints that do not have to be fulfilled exactly, but "as good as possible". Therefore these constraints also have weights, similar to the variables. Examples are constraints that prices should be kept intact as much as possible and the volume change of the trade margin on a product should be equal to the volume change of the underlying transactions. A last example is the constraint that the ratio between output and intermediate consumption in volume terms should not be changed too much.
- Specific soft constraints: For some industries, there may be a relation between the output of a product and the input of another product, or there may be "soft" input-output relationships between the output of one industry and the inputs of another.

After the automated balancing is finished, GDP-estimates according to the production and the expenditure method are equated.

Contrary to what has been discussed above, for the benchmark revision of 2015 balancing was done in current prices only. Since no corresponding data for 2014 existed, volume term analysis was pointless. Furthermore, in the automated balancing not all constraints were activated. This concerned mainly (of course) "soft" constraints about price and volume changes. As the balancing was only done in current prices, these constraints were unnecessary.

A consequence of the column-row-column approach is that value added per industry, total imports, exports and other final expenditure categories will be changed in the balancing process. In a number of cases an accumulation of balancing adjustments in one industry or final expenditure category may, for example, lead to 'unacceptable' results in terms of large (unaccountable) differences in volume changes of output compared with the volume changes of input for certain industries. Therefore a third step in the balancing process is necessary.

After balancing for each product a small input output table is compiled using the assumption of fixed sales per commodity. This process of constructing IO-tables (IOT) may lead to the detection of inconsistent (for example: re-exports larger than imports) or implausible results. In such case, estimates in the supply and use table have to be adjusted in order to get plausible IO-tables. The most common adjustments made on the supply and use tables in this stage are shifts between the exports from domestic production and re-exports.

C. Columns: check and 'repairs'

Since value added and the input structure of industries may be changed in the second step, the plausibility of the balanced results is checked by the branch and final expenditure specialists If the results are unsatisfactory, the data have to be rebalanced and adjusted (manually). The changes in this stage are generally of minor significance.

D. Final Check

When balancing is completed, the SUT and IOT produce a set of consistent and coherent data of supply and use of goods and services on a detailed level in current prices and in volume terms (including price and volume changes). These results are discussed in a small group process managers and experts that were not directly involved in the compilation process. Inputs for this discussion are among others:

- Macro-economic results;
- Production, intermediate consumption and value added by industry;
- Expenditures by product (on an aggregated level);
- Revisions in relation to previous estimates;
- Explanations of the most remarkable results;
- Data from the labour accounts: the final check of the SUT is combined with the final check of the labour accounts to ensure optimal plausibility between both sets of accounts.

This discussion may lead to some final adjustments in the SUT, IOT and labour accounts, which bring the SUT compilation process to an end.

6.1.2.4 Specifics of the balancing process

Three approaches to GDP

All three methods of estimating GDP (income, production, expenditure) are simultaneously applied in the SUT compilation and balancing process. However, only two out of the three approaches are truly independent. The production and the income approach are identical as gross operating surplus is calculated as a residual item. Nevertheless important income components such as compensation of employees and mixed income are covered by high quality register data.

For non-market producers, an income approach is followed by convention as output equals sum of costs with a net operating surplus equalling zero. For market producers the production and income method rely on the same data sources such as SBS. A semi-confrontation between the production approach and the income approach is made during the process of data validation.

In this confrontation, operating surplus from the data sources for the production approach are compared with the operating surplus from the data sources forthe income approach as applied in the institutional sector accounts. The analysis is carried out for the sectors S.11 (non-financial corporations) and S.14 (households). As net operating surplus for S.13 (government) and S.15 (non-profit institutions serving households) is zero by definition, there is no point in confronting the data sources. For S.12 (financial institutions), the same data sources are used for estimating both the supply and use tables and the sector accounts, so a confrontation is pointless. Furthermore, for parts of the real estate services and parts of health care, supply and use tables and sector accounts are also based on the same data sources.

The data sources for the sector accounts are based on tax data for the self-employed (see section 4.12) and the statistics on finance of enterprises (see section 10.1.2). The latter provides data on the non-financial corporations and is based partly on a survey (large companies) and partly on tax records (small companies). This confrontation has led to adjustments on the data sources for the production approach and the income approach (sector accounts). Adjustments are made on both the micro (individual companies) and the industry level. At the end of this process, data sources for the operation surplus for supply and use tables and sectoral accounts are more or less consistent.

This confrontation between the data sources for the production approach and the data sources for the sector accounts put an upper limit on the total adjustment of operating surplus that can be accepted as a result of balancing the expenditure and production approach. As operating surplus in the sector accounts is initially made nearby consistent with operating surplus in the supply and use tables, too much deviation will lead to implausible data in the sector accounts.

As stated above in fact only two truly independent approaches for GDP estimation are applied in the Dutch SUT: the production approach (identical to the income approach) and the expenditure approach. In the balancing process, none of the approaches is given predominance given the limits of acceptable total adjustments on operating surplus.

In the balancing process data on production are often considered more reliable than data on intermediate consumption and final expenditure. There are several reasons for this, among which:

- For many industries, total turnover is aligned to administrative VAT data (see chapter 3). Figures on turnover are therefore considered more reliable than other, sample based, data .
- Output of industries usually refers to a limited set of products, whereas intermediate consumption consists of a wide range of product groups. It is therefore easier to obtain detailed data on output via surveys (which requires only a few questions) than on intermediate consumption (which requires many questions). Detailed data on intermediate consumption are therefore often derived from more generic cost categories, like “cost of sales” or “cost of services” using assumptions and thus will be of lesser quality.
- With respect to gross fixed capital formation in buildings and dwellings, data obtained from the real estate industry are often not exhaustive. Output data fn construction industry are therefore leading in this case.
- For transport services, international trade in services statistics record data at transaction values instead of at cif/fob registration. Given the substantive, model based adjustments to arrive at cif/fob registration creates significant uncertainties.

- The international trade in goods statistics follow a cross border registration. Concomitant adjustments (moving from a cross-border to an ownership transfer based recording) based on sparse data sources imply that these estimates are more uncertain that than those related to output estimates. Furthermore, analysis of the differences between the transaction value and the cif/fob value in the international trade in goods statistics, led to the conclusion that there are significant uncertainties in the cif/fob value.

All arguments basically imply output estimates are generally judged to be more reliable than expenditure data. This does however not mean that no adjustments are made on output, only that they are less frequent and generally relatively smaller in size. In the balancing process none of the expenditure categories (intermediate and final consumption) is given predominance.

Subsequent estimates

In the Dutch practice three really independent estimates of the SUT are made: the quarterly flash (published at T+45 days), the regular quarterly estimate (published at T+85 days) and the final annual estimate (published at T+18 months). The preliminary annual estimates (T+6 months) strongly relies on the results of the sum of the four the regular quarterly estimates. The final annual estimate however, starts from scratch and uses different data sources which were previously not available.

Exhaustiveness

The initial, unbalanced data of SUT whose estimation methods are described in chapters 3, 4, 5 and 7 are already adjusted for exhaustiveness. For illegal activities pre-balanced data are directly included in the SUT-estimates. Therefore in the balancing process no further adjustments for exhaustiveness are needed.

Revising specific variables

A number of variables in the SUT are excluded form adjustment and are treated as exogenous:

- Total taxes and subsidies on products and production by type of tax / subsidy in current prices. This is done because the data from the government administration are judged as highly reliable and to ensure consistency between data from the SUT and EDP. Nevertheless if a tax or subsidy is linked to more than one product the breakdown by product can be adjusted. This holds both for taxes and subsidies on products and other taxes and subsidies on production. For instance, the distribution of energy taxes over gas and electricity can be revised, as long as total energy tax remains unchanged.
- Government production in current prices. This is done because the data from the government administration are judged as highly reliable and to ensure consistency between data from the SUT and EDP. The breakdown of output into market and non-market will be unadjusted. However, the breakdown of market production by products and of total costs (= total output) by cost components i.e. intermediate consumption (by products) and of value added components can be adjusted . For example, if in the balancing process, other taxes on production or compensation of employees are adjusted, intermediate consumption has to be adjusted with a similar amount with the opposite sign in order to ensure a zero net operating surplus and consistency with total production.
- Total government consumption in current prices. This is done because the data from the government administration are judged as highly reliable and to ensure consistency between

data from the SUT and EDP. However, government consumption by products may be adjusted in the balancing process.

- Total compensation of employees in current and constant prices. Data are provided by the labour accounts and are based on administrative tax data. In addition some data adjustments are carried out for exhaustiveness (see chapter 4 and 7 for details). Compensation of employees at the industry level as obtained from the labour accounts may however be changed if inconsistencies with other data sources like business statistics are encountered.
- Consumption of fixed capital by industry in current and constant prices. These data are estimated using the Perpetual Inventory Method (PIM, see chapter 4). Since there are conceptual differences with depreciation from the business records, the latter cannot be used. Therefore, no competing data source for consumption of fixed capital exist. However, during the balancing process there is a feedback loop as the inputs for the PIM may change when estimates gross fixed capital formation are adjusted.
- FISIM by industry in current and constant prices. Since FISIM is estimated with a model providing balanced results, there is no reason to adjust these model estimates.
- Pension and insurance services by main category in current and constant prices. These data are estimated within the framework of the sector accounts. A complete data set is available for output, imports, exports, household consumption and total intermediate consumption. These data are not modified as no alternative data sources are available. Intermediate consumption by industry may however be changed as long as the estimated total intermediate consumption remains unchanged.

In a number of cases, there are conceptual relationships between variables which require special attention in the balancing process:

- As stated above, supplementary estimates for illegal activities are already balanced before entering the SUT. Any further adjustments in supply cannot be made independently from demand. For example, if household consumption of heroin is adjusted upwards, export must be adjusted downwards (or imports must be adjusted upwards) with the same amount. However in a number of cases illegal output is combined in one product of the SUT with other, legal, output. Adjustments of entries in this product are allowed as long as it is ensured this affects only the legal fragments of these entries.
- In case of non-market production there is a direct relationship between output and final use. For government output no problem will emerge as neither output nor consumption need adjustment. For other non-market produces (mostly of NPISH) this relation must be maintained and thus requires attention. This is especially the case when non-market and market output are combined in the same product of the SUT. Likewise balancing adjustments of entries in this product are possible as long as it is ensured that it concerns the market output only.
- Changes in inventories are directly related to output and intermediate consumption. For example output is often estimated as sales plus changes in inventories of finished goods as these are the variables obtained from the source data. As such, adjustments of changes in inventories are linked to adjustment of output or intermediate consumption. For this reason, adjustments on changes in inventories of finished goods, work in progress and supplies are rarely made and if so, with great caution. Adjustments in inventories could either address errors in output or errors in sales.

Details on manual balancing

There is a wide variety of causes why discrepancies between supply and demand in the SUT may occur. An exhaustive list of investigations needed to resolve these discrepancies is therefore not possible. Generally speaking, there are four types of investigations:

- Micro-analysis of a single company. Large inconsistencies may relate to shocks in the data as reported by a single company. It will be checked whether all data sources for this company provide a consistent picture, both at the level of total output, exports, GFCG, etc. as at the level of specific products. In this context, the dedicated unit on consistent observation of large and complex enterprises (ConGO) at Statistics Netherlands plays a crucial role in achieving data consistency in relation to the largest and most complex enterprises. The ConGO unit is responsible for data consistency of wide area of statistics addressing the 300 largest Dutch enterprises. Despite the work carried out by the ConGO unit, micro analysis will still be necessary in the process of supply-use balancing because of conceptual differences and differences of ESA 2010 with bookkeeping conventions.
- Investigation of sampling methods. When comparing the results of two or more statistics differences in the population of the underlying samples may on occasion lead to incomparable results after grossing up. If necessary it is investigated whether sampling methods are truly causing this data incomparability. Such problems may particularly occur when examining the data sources of rather heterogeneous industries like “other mining and quarrying”, “other manufacturing” and “other services”.
- Use of external data sources. Most estimates for the SUT are based on data sources by industry or expenditure category. For some products, independent data on a product level are available. Examples are fuel and energy for which data on (volumes of) supply and use are available. Confrontation of the data in the supply and use tables with this information may lead to balancing adjustments.
- Comparing discrepancies between related products. When an excess of supply (demand) exists for a product and an excess of demand (supply) exists for a strongly related product, this may give reason to transfers of supply or demand between these products. This may for example occur for the intermediate consumption in construction, where in business statistics large parts are reported as “supplies”. The ratio between products can vary substantially from one year to another.

6.1.2.5 Results of the balancing process

It is not possible to present exact figures on the impact of the balancing process on GDP estimates because it is not possible to exhaustively separate correction of errors from truly balancing adjustments. A simple approach is to take the values at the start of the balancing process as the data before balancing and record all adjustments in the balancing process as balancing adjustments. This however leads to an overestimation of balancing adjustments. There are several reasons for this:

- During the balancing process new or improved data sources may become available. This new information may lead to adjustments of the data.
- During the balancing process, errors in the processing of the source data may be found. These errors are corrected.
- During the balancing process, errors may be found in data sources.

To record the above mentioned corrections as balancing adjustments provides a distorted figure of the latter.

In relation to the process tables, these first two types of corrections mentioned above are preferably not recorded as balancing adjustments, but instead under survey data and the like. Otherwise, the process tables would show an inconsistency in the processing of the data source, combined with a countering in balancing adjustment. Although this description is correct when factually observing the process step-by-step, it is of no use in explaining the relation between data sources and the final estimates.

In case of errors in data sources it is also preferred not to record such corrections as balancing adjustments. Instead, it should be recorded as a data validation in order to distinguish this type of corrections from real balancing adjustments.

Nevertheless balancing adjustments as presented in the process tables may contain elements of adjustments from another heading.

In the process tables, the deciding factor for the recording of adjustments is whether, *considering the state of art of the data sources after balancing, it would lead (without using any information from other data sources) to a different initial estimate of the concerning industry or expenditure category.* If so the adjustment is recorded under data validation, if not it is recorded under balancing adjustments. The data presented in this section are based on this criterion.

Before balancing the SUT for the benchmark year 2015, on the macro level there was a surplus of the use of goods and services over supply. This surplus was around 25 billion euros, or 3.5 per cent of GDP. Both in goods and in services, the surplus of demand was over 10 billion euros. As generally output is considered more reliable than intermediate consumption, balancing adjustments are made mainly on the use side. Relatively large adjustments on production were made in waste management and wholesale trade for missing supply of waste, and in electricity supply, where it is sometimes difficult to distinguish electricity production from trade in electricity.

Table 6.3 Impact of balancing on production, intermediate consumption and value added

		Production	Int. consumption	Value added
A	Agriculture, forestry and fishing	0,2	0,0	0,5
B	Mining anmd quarrying	0,5	-2,8	2,2
C	Manufacturing	0,1	-0,3	1,5
D	Electricity, gas, steam and airconditioning supply	-2,4	-2,0	-3,0
E	Water supply, sewarage, waste management and remediation activities	2,9	-2,1	11,0
F	Construction	0,0	0,0	0,0
G	Wholesale and retail trade; repair of motor vehicles and motorcycles	1,0	-1,0	2,7
H	Transportation and storage	0,0	0,1	-0,1
I	Accomodation and food service activities	0,3	-0,8	1,4
J	Information and communication	0,4	-1,3	2,4
K	Financial and insurance activities	0,0	-3,0	2,0
L	Real estate activities	0,0	-1,4	1,6
M	Professional, scientific and technical activities	-0,1	-2,3	2,1
N	Administrative and support service activities	0,0	-0,6	0,3
O	Public administration and defense; compulsory social security	0,0	0,0	0,0
P	Education	0,0	-1,0	0,3
Q	Human health and social work activities	-0,4	-5,3	1,8
R	Arts, entertainment and recreation	0,0	-4,2	4,9
S	Other service activities	-0,3	-1,6	0,8
T	Activities of households as employers	0,0	0,0	0,0
	Total industries	0,1	-1,0	1,5

Tables 6.4 and 6.5 show the balancing adjustments for the production approach and the expenditure approach. Only the results from the production and expenditure approaches are shown as the income approach is identical to the production approach. Table 6.6 shows the adjustments in to the production approach by industry.

Table 6.4. Balancing adjustments in the production approach

	Initial est.	Balancing	Final est.
	million euros		
Output of goods and services	1.337.140	1716	1.338.856
Intermediate consumption	725.244	-7223	718.021
Gross value added	611.896	8939	620.835
Taxes on products	69.896	0	69.896
Subsidies on products	723	0	723
Gross domestic product	681.069	8939	690.008

t

Table 6.5. Balancing adjustments in the expenditure approach

	Initial estimate	Balancing	Final estimate
Total final consumption expenditure	483636	-466	483170
Household final consumption expenditure	305796	-424	305372
NPISH final consumption expenditure	5486	-42	5444
General government final consumption expenditure	172354	0	172354
Gross capital formation	156740	-1661	155079
Gross fixed capital formation	153827	-1294	152533
Changes in inventories	2632	-388	2244
Acquisitions less disposals of valuables	281	21	302
Exports of goods and services	575019	-4666	570353
Goods	420671	-2297	418374
Services	154348	-2369	151979
Imports of goods and services	514996	3598	518594
Goods	348520	4406	352926
Services	166476	-808	165668
Gross domestic product	700399	-10391	690008

Table 6.6. Balancing adjustments on value added and GDP, million euros

		Initial estimate	Balancing	Final estimate
A	Agriculture, forestry and fishing	11842	56	11898
B	Mining anmd quarrying	12296	273	12569
C	Manufacturing	73427	1106	74533
D	Electricity, gas, steam and airconditioning supply	8055	-238	7817
E	Water supply, sewarage, waste management and remediation activities	3758	414	4172
F	Construction	26389	5	26394
G	Wholesale and retail trade; repair of motor vehicles and motorcycles	81363	2213	83576
H	Transportation and storage	30703	-38	30665
I	Accomodation and food service activities	11662	166	11828
J	Information and communication	28775	694	29469
K	Financial and insurance activities	51476	1018	52494
L	Real estate activities	38893	611	39504
M	Professional, scientific and technical activities	49905	1032	50937
N	Administrative and support service activities	38505	132	38637
O	Public administration and defense; compulsory social security	44041	0	44041
P	Education	30929	79	31008
Q	Human health and social work activities	55562	1025	56587
R	Arts, entertainment and recreation	6782	332	7114
S	Other service activities	7001	59	7060
T	Activities of households as employers	532	0	532
	Total industries	611896	8939	620835
	Taxes on production	69896	0	69896
	Subsidies on production	-723	0	-723
	Gross domestic product	681069	8939	690008

Providing accurate data on the GDP balancing adjustments over a longer time series is in this inventory not possible and not meaningful because of at least two reasons:

First, outside of the benchmark revisions, the main goal of GDP estimates is to provide the best possible estimates of volume growth of GDP and its components. As a consequence, balancing adjustments in one year will strongly affect pre-balanced estimates in the subsequent year. Balancing adjustments other than those related to a benchmark revision year would therefore be artificially low.

Second, in order to construct such data for previous years a distinction must be made between adjustments addressing errors and adjustments addressing "real" balancing. This type information was until reporting year 2015 not available in the databases of the SUT-process and is very hard if not impossible to reconstruct. The background for (large) adjustments is recorded, but on the product level a direct link to the source statistics is not maintained. When looking at a particular reporting year it is possible to explain the backgrounds of an adjustment at the level of a particular product. However, due to the cumulated balancing adjustments in preceding years it is very difficult to obtain an overview of all adjustments in the estimates of a particular industry. A new (IT) automation system has been developed, which supports the provision of information on whether adjustments are caused by errors or are truly related to balancing. From the benchmark revision of 2015 onwards, data on "real" balancing adjustments can be provided.

Nevertheless the following general information on the largest balancing adjustments encountered in the past can be presented:

- Generally larger inconsistencies occur rather in goods than in services. The main reason is that supply and use of goods are usually more volatile than that of services. Since balancing adjustments of previous years are often already included in the pre-balancing data, this implies products with small volatility will usually lead to smaller inconsistencies and thus smaller balancing adjustments.
- Within services, the largest balancing differences occur for royalties and licences and intra-company services. These products are large and also quite volatile.
- Within goods, agricultural products, fuel and ships show large inconsistencies. The price volatility of agricultural products is an important cause. In relation to fuel, change in ownership of production sites is a determining factor. A (daughter) company refining crude oil on own account may shift from one year to another to crude oil processing where crude oil and oil products remain under ownership of a (foreign) principal, i.e. mother company. Manufacturing of ships is often arranged via foreign ship yards however under ownership and management of Dutch manufacturers (production abroad). At the same time import and export of ships is sometimes missed in the foreign trade statistics. The ship simply sails out without being recorded in custom's records.
- There are no specific industries for which structurally more balancing adjustments are found than others. If adjustments on output or intermediate consumption are too substantive, the ratio between the volume change of output and intermediate consumption will become implausible. An adjustment in a certain product is often counterbalanced by an opposite adjustment in another so that output / intermediate consumption ratios are not disturbed too much. For the benchmark revision however, there were larger differences between industries. The largest adjustments were made for the industries "Wholesale trade" and "Health care and social work activities".
- When looking at final expenditure, the largest adjustments are observed in gross fixed capital formation of construction products and in international trade in goods and services. A explained before, government consumption is not adjusted unless an explicit error is found. And for most products, changes in household consumption are often limited, so that large adjustments there are not regular. Balancing adjustments in inventories are relatively small although larger corrections may be found at the product level.

6.2 Other approaches used to validate GDP

The statistical unit used to compile the institutional sector accounts (ISA) is the institutional unit (enterprise group). This is the unit in which decisions are made on incurring debt and economic issues and which can independently own goods and other assets. In practice, it is not suitable to provide a detailed description of the production processes of this type of units, as it may be involved in a large number of different activities. For this reason, reference is made to another statistical unit for the description of the production process in the supply and use tables, the (local) kind-of-activity unit (KAU). An institutional unit can therefore comprise several KAU's. Nevertheless production, intermediate consumption are reflected in the ISA on an aggregated level leaving out the product dimension. While the KAU's are grouped by activity in the supply and use tables, institutional units are classified by sector in the sector accounts.

Compilation procedures

In 2012 a redesign of the production process of the Dutch sector accounts was implemented, after several years of preparation, design, development and testing. A substantial part of the

‘manual work’ is since then automated. In the redesigned process only a limited number of (large) adjustments are executed manually.

A short outline of the production process:

Sector data

Subject matter experts compile a complete dataset (including all required transactions and balance sheet entries) for each (sub)sector of the ISA. This goes for non-financial accounts, financial accounts, other changes in volume and prices of assets and balance sheets. For a number of transactions the datasets also include information on the counterpart. The compilation process consists of the collection of source data, transformation to ESA2010 requirements and codes, analyses and quality assessment of the source data. If necessary the expert contacts the internal of external producer of source data. Subsequently the data are transferred to a database environment (Integration System Sector Accounts, ISR) in which the balancing takes place. The number of (sub)sectors distinguished in the balancing system is 25: S.11 (1), S.12 (10), S.13 (11), S.14 (1), S.15 (1) and S.2 (See chapter 9) For each sector a short report on this dataset is placed in a central folder. The report describes the economic situation of the sector concerned (developments, outliers, etc.), and explains changes compared to earlier and previous estimates.

Standard adjustments

With the tool ‘Standard Adjustment Machine’ (SIM) a large number of standard adjustments are executed within ISR, combined with a comment on the justification/explanation for the adjustment. The adjustments concern choices between sector and counterpart sector information in whom-to-whom matrices. In principle these standard adjustments are executed every reporting period in exactly the same way. Only in case of changes in the source data used, the standard adjustments should be changed. Normally such kinds of changes are carried out during a benchmark revision when newly available source data are implemented in the national accounts.

Analysis of large differences

With the help of a number of standard reports, brought together in the so-called Dashboard, the remaining differences between uses and resources on a transaction level above 500 million euro are judged by a small group of experts. The selected transactions are discussed with the concerning expert(s) and further analysed. The result of additional research is a manual adjustment in ISR, combined with a short comment with the justification/explanation for this specific correction.

Remaining differences

The remaining smaller differences between uses and resources are resolved by a tool called ‘Balancing Machine’, reporting its adjustments in ISR. According to a set of rules and weights the sector accounts are made consistent, introducing checks and balances for horizontal budget-identities, whom-to-whom consistencies, and technical relations such as for employer’s social contributions.

There is one exception: the budget-identity is not yet met. The vertical statistical discrepancies for each S.12 sector above 500 million euros is analysed and specific adjustments for the

budget-identity are made combined with a comment in ISR. An iterative process is started in which the 'Balancing Machine' resolves all differences, including restoring the budget-identity for S.12 and plausibility analyses which may lead to additional modifications for instance reducing discrepancies between the current accounts and the financial accounts for other sectors.

Before each run of the Balancing Machine, the data of SUT transactions (P1 output, P2 intermediate consumption, D11 wages and salaries, D12 employers' social contributions, D29 Other taxes on production, D39 other subsidies on production) are copied from the supply and use database to the Integration System Sector Accounts. According to dual classification distribution keys these transactions are reallocated from industries to the (sub)sectors.

Also, other SUT transactions (some of them including more detailed categories) are transferred from the supply and use database to ISR without the dual classification procedure: D21 taxes on products, D31 subsidies on products, P3 final consumption expenditure, P5 gross capital formation, P.51c consumption of fixed capital, P6 exports of goods and services, P7 imports of goods and services, B.1g gross domestic product. The supply-use data are not adjusted in the production process of the sector accounts.

After the Balancing Machine has produced a consistent data set, all (sector and transaction) experts are asked to evaluate the results. For this analysis a set of standard reports are available. If implausibility's are detected, the Balancing Machine is run again, after the inclusion of the necessary adjustments. After 3 to 4 runs of the Balancing Machine a final, consistent, dataset is available.

Evaluation of the figures

At the start and at the end of the production process a session with all experts is organised to evaluate and discuss the data. The figures of each (sub)sector are displayed on a big screen and plenary examined. For each (sub)sector an expert of another (sub)sector is invited to discuss/examine the figures. At the start the focus is on missing figures and outliers. At the end of the process the focus is on consistency, completeness, plausibility and of course economic interpretation and meaningfulness.

In a special meeting of the project managers of the ISA-process and the team manager sector accounts, the final results are once again evaluated. Any errors or implausibility's encountered in this phase will be followed up by adjustments and another run of the Balancing Machine. For this meeting for each sector a short document is prepared. If the figures are accepted, the topics for dissemination in the form of articles are discussed.

The production processes for the quarterly and the provisional annual estimates are practically similar to the description of the final estimates above. However, the following issues are worth mentioning:

No complete new dataset

The quarterly estimates are the base for the first annual estimate. Between the estimate of the fourth quarter (end of March year t+1) and the first (independent) estimate for the provisional year (June t+1) only a limited number of new source data become available. So, for this provisional estimate, as well as the following ones in June t+2 and June t+3, new sector data are only compiled when new information is available. If there is no new information, the previously processed data are used excluding the adjustments made by the Balancing Machine in those previous estimates.

Consistency years and quarters

After each annual estimate the quarterly figures concerning year rebalanced so they are consistent with the annual figures. For this process an optimization model named ‘Quarter Machine’ is developed. Actually this model operates just like the Balancing Machine but processes more than one period simultaneously. The Quarter Machine produces consistent quarterly figures both with respect the quarters and the annual estimates. In this process the annual data are leading and remain unadjusted.

Revisions (regular)

The annual estimates are evaluated in the same way as the quarterly ones. What is different is that the revisions compared to earlier estimates are judged. The first estimate (June year t+1) is compared to the sum of the quarterly estimates (March t+1) and the second estimate (June T+2) is compared with the first estimate (June T+1).

CHAPTER 7 OVERVIEW OF THE ALLOWANCES FOR EXHAUSTIVENESS

7.1 Introduction

7.1.1 Geographical coverage

The delineation of the Dutch economic territory and the designation of residents are in conformity with the definitions given in ESA 2010, sections 2.04 to 2.11 inclusive.

The territory of the Netherlands has changed in 2010. From 10 October 2010 (10-10-10) onward the Islands Curaçao and St. Maarten are separate countries within the Kingdom of the Netherlands. The other islands of the former Netherlands Antilles, Bonaire, St. Eustatius and Saba, became special municipalities ("Openbare Lichamen") within the Netherlands. The Netherlands Antilles do not exist anymore from 10-10-10 onward.

From 10-10-10 onwards the Kingdom of the Netherlands consists of four parts:

- The Netherlands, that is the territory of the Kingdom in Europe plus Bonaire, St. Eustatius and Saba as special municipalities;
- Curaçao;
- St. Maarten;
- Aruba.

While a number of matters subject to royal authority, such as defence and foreign relations, are regulated jointly, the four parts enjoy complete autonomy with regard to other 'national' matters.

The Dutch economic territory however does not encompass Aruba, Bonaire, Curaçao, St. Maarten, St. Eustatius and Saba, because:

- Under the protocol of 25 March 1957, the Treaty of Rome applies only to the Kingdom in Europe and Netherlands New Guinea;
- By a convention of 13 November 1962, the Netherlands Antilles were incorporated in Annex IV (associated countries and areas) of the Treaty of Rome;
- The European Community is based on a customs union (Article 9 of the Treaty of Rome); ESA 95, section 2.05, refers to the territory benefiting from the free movement of goods;
- Only that part of the territory of the Kingdom lying within Europe forms part of the Community customs area (Directive 2151/84/EC of 23 July 1984).

The above-mentioned is confirmed in Commission Regulation (EC) No 109/2005 of 24 January 2005 on the definition of the economic territory of Member States for the purpose of Council Regulation (EC, Euratom) No 1287/2003 on the harmonisation of gross national income at market prices. In this regulation it is stated that the territory of the Netherlands encompasses 'the territory of the Kingdom of the Netherlands, with the exception of overseas countries and territories over which it exercises sovereignty, as defined in Annex II of the Treaty establishing the European Community'. In this Annex II Aruba and the Netherlands Antilles are stated.

There are no free trade areas within the Dutch territory. The value added generated in bonded warehouses, as a result of, for instance, storage and duty-free sales at airports, is included in GDP.

The Dutch section of the continental shelf is regarded as part of the economic territory of the Netherlands. The extraction of oil and gas that takes place in this area is thus included in Dutch GDP. Inclusion in the statistics is based on the grant of an operating licence.

Territorial enclaves as defined in ESA 2010, section 2.05, relate in particular to Dutch embassies and some barrack areas in NATO partner countries or other countries. Extra-territorial enclaves as defined in ESA 2010, section 2.06, include foreign embassies and consulates and international organisations such as the International Court of Justice, the Permanent Court of Arbitration, the Dutch Reactor Centre, ESTEC, EUROCONTROL, the Organisation for the Prohibition of Chemical Weapons, the International Criminal Court and the NATO.

The Netherlands does not have any deposits situated in international waters outside the Dutch part of the continental shelf that are exploited by resident units.

A point worth mentioning is that, in the province of Noord-Brabant, there are about 30 small Belgian areas that together form the municipality of Baarle-Hertog. These areas in turn enclose two small enclaves, which form part of the Dutch municipality of Baarle-Nassau.

7.1.2 General approach to exhaustiveness

There are several approaches towards generating estimates for the non-observed economy (NOE) (OECD, 2002, Measuring the non-observed economy; Kazemier 2006, Monitoring underground economy). Macro model methods often draw a lot of attention due to the substantial amounts they generate, however it is obvious that these estimates have serious shortcomings. Most notably, they are generally based on very crude assumptions and their modular approach risks double counting of activities that are already included in national accounts and GDP/GNI-estimates. Finally, the macro approach makes them less suitable for national accounts usage as detailed information is needed at the industry and product level as found in the Dutch supply use tables (SUT).

The second type of approach is based on discrepancy methods. There various examples of this approach. On the macro level, for instance, one could compare the production, income and/or expenditure approach with each other, and identify possible differences as due to non-observed economy. Similar to macro model methods the lack of detail is a serious drawback of this example. Applied on a more detailed level discrepancy methods might be appropriate.

A third approach is to run surveys. Statistics Netherlands has experimented for several years with conducting surveys on underground activities. Unfortunately, the survey results appeared to be unreliable due to low response rates and unwillingness of respondents to admit engaging in hidden work (for instance as shown by a specific drop-out pattern). Nevertheless, surveys provided useful information for identification of the scope of non-observed economy i.e. in which sectors do hidden activities occur and for obtaining information on e.g. average remuneration, regarding NOE-activities.

The approach to exhaustiveness that is followed at Statistics Netherlands is activity specific. As a first step, a list of activities is compiled of which part of output is thought to be non-observed. The above mentioned surveys played a role in compiling this list. Secondly, for each activity an estimate of output and intermediate consumption is made, using the most suitable method given available data sources. In the case of illegal activities, supplementary to production side estimates, expenditure side estimates are made. Examples of used data sources are research reports, administrative data, newspaper articles and internet information. Sometimes, due to a

lack of information, estimates are based on expert judgement. The last step is to translate the estimated non-observed activities into labour inputs. Hereto information is used about average remuneration for specific activities derived from the earlier mentioned survey on underground activities. In a second step, the number of hours worked is translated into full time equivalents (fte) and the number of fte's is translated into the number of jobs (distinguishing self-employed and employees) taking into account the expected average number of hours worked per worker (part-time factor). As a result, consistency is achieved between the supply and use tables, the institutional sector accounts and the labour accounts.

For non-benchmark year the estimation process depends on the specific activity in question and the available data. In most cases the 2015 benchmark estimate will be extrapolated, based on the development of indicators such as population, prices, or growth rates in specific NACE activities. Parameters used in the activity specific methods such as seizure rates for drugs are usually not revised, due to the absence of reliable and comparable annual data. Methodological revisions as well as the addition of new NOE-activities in principle only occur in benchmark revisions. The production approach is generally considered most exhaustive because of the use of the statistical business register (See chapter 3 for more details) and the use of administrative data. For a number of industries the initial production data from business statistics are overruled by expenditure side data. For instance, in the case of hairdressers, the consumption estimate of hairdressing services is based upon population data and the number of visits by customers and prices charged. The reported value in business statistics is adjusted in order to include underground production (see section 7.2.3.1 for more details).

Technically speaking, the estimates for NOE-activities are added to estimates of production and (final) use in the processing stage prior to balancing (see chapter 6 for more details on the compilation processes in the national accounts). An additional mark-up is added or an adjustment to observed data for certain activities is made. This requires that the estimates for non-observed output and intermediate consumption are translated into the required product and industry detail of the Dutch national accounts. It needs to be mentioned that due to the issue of double counting value added of non-observed activities is not necessarily equal to the impact of their inclusion on GDP. Some revenues will already be included in national accounts, for instance, coffee shops (sales of cannabis) are included as statistical units in the statistical business register and therefore will have (at least) imputed production as a consequence of the grossing up of /samples. Also some expenses may already be recorded in the accounts as final consumption of households. Some of these expenses need to be relocated or adjusted because of double counting.

7.2 Allowances for exhaustiveness in the production approach

7.2.1 Identification of types of non-exhaustiveness (for which adjustments are needed)

Estimates for exhaustiveness are as much as possible classified to the N-classes as defined by Eurostat in the tabular approach to exhaustiveness:

N1: types of non-exhaustiveness for absence because of producers that should have registered but did not (underground producer), for example producers that fail to register in order to avoid tax and social security obligations (often small producers with turnover which exceed the thresholds above which they should register their income);

N2: types of non-exhaustiveness identified for absence because of illegal producers that fail to register (N2), for example prostitution, drugs and smuggling;

N3: types of non-exhaustiveness identified for exemption because producers are not obliged to register (N3), for example if they have no market output, these could be non-market household producers involved in a. production of goods for own consumption or for own fixed capital formation, and b. construction of and repairs to dwellings or producers has some market output but it is below the level at which the producer is expected to register as an entrepreneur;

N4: types of non-exhaustiveness identified for absence because registered legal persons are not included in statistics, for example if business register is out of date or updating procedures are inadequate, the classification (activity, size or geographic codes) are incorrect, the legal person is excluded from survey frame because its size is below a certain threshold;

N5: types of non-exhaustiveness identified for absence because registered entrepreneurs are not included in statistics, for example the administrative source with lists of registered entrepreneurs may not always pass on complete or up to a date lists to the statistical office or could also be excluded from survey frame because of size threshold or incorrect business register;

N6: types of non-exhaustiveness identified for evasion because of mis-reporting by producers, for example gross output under-reported, intermediate consumption over-reported in order to evade or reduce income tax, VAT or social security contributions. This often involves the maintenance of two sets of books, payments of envelope salaries which are recorded as intermediate consumption, payments in cash without receipts and VAT fraud.

N7: types of non-exhaustiveness identified because of statistical deficiencies in data, this could be: i. data that is incomplete, not collected or not directly collectable; ii. data that is incorrectly handled, processed or compiled by statisticians. Examples are handling of non-response, production for own final use by market producers, tips, wages and salaries in kind and secondary activities.

In addition to these Eurostat classification one additional N-classes is reported:

N8: Adjustments because of the functional approach of agriculture in the supply and use tables. For agricultural side-activities in non-agricultural industries, adjustments are made on output, intermediate consumption and value added.

7.2.2 Adjustments made for the different types of non-exhaustiveness

Table 7.1 provides an overview of the various kinds of exhaustiveness that were identified and provided with supplementary estimates in the 2015 benchmark revision. The classification into the above mentioned N-classes proved not straightforward as some of the N-classes seemingly overlap and may be subject to interpretation. As a general rule in this inventory, under N1 allowances due to turnover fraud are reported for example in the cases of car repair and hairdressers.

Table 7.1 Overview of estimates made for exhaustiveness (by activity, type, industry and transaction)

Activity	Type	Isic	production	Int. Cons.	Value Added
House renovations and maintanance	N1	41,43	1485	743	742
Car repair and maintanance	N1	45	213	56	157
Food/beverage service activities	N1	56	280	49	231
Hairdressers and landscaping	N1	81, 96	560	54	506
Cleaning houses and buildings	N1	81	1337	0	1337
Babysitting and childcare	N1	88	316	0	316
Other	N1	multiple	373	11	362
Subtotal			4564	913	3651
Cannabis	N2	12,56	4053	1137	2916
Drugs	N2	21,47	680	59	621
Smuggling cigarettes and fencing	N2	47	488	49	439
Illegal copying and gambling	N2	59,92	218	35	183
Temporary employment mediation	N2	78	316	16	300
Prostitution	N2	96	607	214	393
Adjustment double counting	N2		-512	-421	-91
Subtotal			5850	1089	4761
Own account construction	N3	41	208	151	57
Tips	N3	49,55,56	567	0	567
Onw account energy production	N3	35	176	0	176
Renting of dwellings	N3	68	164	50	114
Other	N3	01	12	7	5
Subtotal			1127	208	919
Cost Fraud	N6	multiple	0	-763	763
Vat gap	N6	multiple	0	-970	970
Subtotal			0	-1733	1733
Income in kind	N7	multiple	158	-4869	5027
Double counting aggriculture	N8	multiple	-1839	-1327	-512
Subtotal			-1681	-6196	4515
Total			9860	-5719	15579

N2 concerns illegal activities while N3 covers production by non-registered producers own account construction, production of energy and renting of dwellings (AirBnB-type revenues). N6 concerns allowances for cost fraud i.e. using goods and services paid by the enterprise for

private purposes, for instance the use of cell phones. Estimates for income in kind are reported under N7. Other items classified under N7 like production for own final use by market producers and adjustment for partial non-response and secondary activities are already included in the source data and are therefore not reported with exhaustiveness. The added clas N8 refers to specific exhaustiveness adjustments concerning double counting of agricultural output

The classes N4 and N5 are not applicable for the Netherlands as the SBR is up to date and SBS and other statistics concerning SBS-type variables are always grossed up in order to cover the entire population. Grossing up is either done using administrative data (VAT, wage tax) or using population data in combination with stratified sampling.

Total estimates for exhaustiveness amount to 15.6 billion euro in GVA which is equivalent 2.5 per cent of GVA of the Dutch economy (2.3 per cent of GDP).

Table 7.1 shows that the largest adjustments are for N7, followed by N2 and N1. Within N1, the largest estimates are for cleaning houses and buildings and house renovations and maintenance and hairdressing and landscaping. The total estimate for value added linked to N1-type activities amounts to 3.6 billion euros in 2015. Concerning illegal activities – N2 – cannabis production and trade are the largest components, followed by heroin/cocaine trafficking. The total upward adjustment to value added due to illegal activities is 4.9 billion euros (4.8 billion euros after adjustment for double counting). Within N3, the largest adjustment is for tips.

Table 7.2 Exhaustiveness method per activity

Activity	Type	Data source
House renovations and maintanance	N1	Commodity flow method
Car repair and maintanance	N1	Commodity flow method
Food/beverage service activities	N1	Commodity flow method
Hairdressers and landscaping	N1	Discrepancy analysis
Cleaning houses and buildings	N1	Research reports
Babysitting and childcare	N1	Commodity flow method
Other	N1	Commodity flow method
Cannabis	N2	Supply - use method
Drugs	N2	Commodity flow method
Smuggling cigarettes and fencing	N2	Supply based method
Illegal copying and gambling	N2	Demand based method
Temporary employment mediation	N2	Not applicable
Prostitution	N2	Supply - use method
Adjustment double counting	N2	Expert judgement
Own account construction	N3	Commodity flow method
Tips	N3	Commodity flow method
Own account energy production	N3	Energy statistics
Renting of dwellings	N3	Research reports
Other	N3	Commodity flow method
Cost Fraud	N6	Expert judgement
Vat gap	N6	Various
Income in kind	N7	Administrative data and export judgement
Double counting aggriculture	N8	

Table 7.2 gives an overview of sources and methods applied in estimating missing parts of the economy per activity and type.

Finally table 7.3 gives the contribution of each source and method for estimating NOE both in value and share.

Table 7.3 Share of the method in total value of exhaustiveness method

	million	%
Administrative data and expert judgement	5327	34
Administrative data and research reports	57	0
Commodity flow method	621	4
Demand based method	183	1
Discrepancy analysis	506	3
Energy statistics	176	1
Expert judgement	1219	8
Research reports	2193	14
Research reports and expert judgement	157	1
SBS-data and expert judgement	-512	-3
Supply - use method	3309	21
Supply based method	439	3
various	1904	12
Total	15579	100

7.2.3 Exhaustiveness methods

This section provides brief information about the methods used for estimating the various elements based on the report provided as annex 7.1.

7.2.3.1 Methodological description of adjustments for N1 elements

Maintenance of dwellings

According to a survey in 2015 by the Dutch branch organization of dwelling owners (Vereniging Eigen Huis (VEH)) round about 25 % of owners of dwellings responds that part of the maintenance of their dwelling is done informally. That does not necessarily mean that all their maintenance is carried out informally, as substantial, incidental large maintenance (replacement of central heating systems, kitchens etc.) often will be carried out by 'official' suppliers because of guarantees. It is assumed that only 80% of maintenance will be done informally for dwelling owners hiring informal suppliers. The average costs of maintenance is estimated at 1% of the capital value of the dwelling based on information from mortgage suppliers on the internet (a.o. Hypotheker). Excluding VAT, which is not applicable to informal activities, a percentage of 0,8 is applied.

Average capital value 2015: 206.000 euros

Number of owner occupied dwellings 2015: 4265934

Cost of maintenance (excluding VAT) 0,8 % of the capital value

Share of informal activities 20% (0.8 * 25%)

Using the data above results in an estimate for informal maintenance of :

206.000 * 4265934 *0,008 * 0.20 (/10^6) = 1406 million euros.

For rented dwellings (total number 3320000) an average annual of 120 euros for maintenance is assumed with the a similar share for the informal part, leading to an amount of 80 million euros for informal activities.

120* 3320000 *0.20 (/10^6) = 80 million euros

Total amount for exhaustiveness in maintenance of dwelling of 1485 results (difference due to rounding).

Repair and maintenance of person cars and motorbikes

Point of departure is the motor vehicle fleet (person cars and motorcycles) in the Netherlands. It is assumed that lease cars and company owned cars are not subject to repair and maintenance in the hidden economy. Moreover, it is assumed that motor vehicles under 5 years old will in all likelihood also not be repaired in the hidden economy due to for instance factory warranties and the durability of today's cars. For 2015, approximately 5.9 million person cars and 0.7 million motorbikes may be subject to informal maintenance. The assumption is made that the price of annual maintenance and/or repair in the hidden circuit amounts to 65 per cent of the price in official car repair.

Regarding maintenance costs, the estimate is based on an assumption on the percentages of car and motorcycle fleet that are treated in the hidden economy varying with the age of the car (ranging between 6 and 7 per cent). Next to that an adjustment is made because not every car owner will do proper annual maintenance. Depending on the age of the car the frequency ranges from a bit less than 1.5 year for most recent cars to once per ten years for the old timers. For motorbikes the estimate for hidden maintenance amounts to 2 million euros. For person cars the estimate is 101 million euros

Likewise, an estimate for repairs is made based on the number of insurance claims per year and the average damage, based on a report of the RABO bank on the industry car repair (Cijfers en trends van schadeherstelbedrijven) in combination with an assumed percentage of cars and motorbikes which are repaired in the hidden economy of 10 per cent. With a number of damages of 65 thousand for motorbikes and 1.4 million for person cars the estimates for hidden repairs amount of 4 respectively 105 million euros for 2015.

The total estimate for hidden output in repair and maintenance of person cars and motorbikes amounts to 213 million euros for 2015.

Estimates for intermediate consumption are obtained assuming the same ratio direct costs of the service with a discount to production as found in the official sector.

Food and beverage service activities

For estimating hidden economy in services concerning food and beverages a mark-up of 0.5 to 3 per cent of legal production is applied depending on the activity. 0.5 per cent is applied for hotels as we assume that most payments occur electronically and there is less possibility for hidden transactions. The same holds more or less for restaurants where a percentage of 1 is applied. For the other concerning NACE-classes 3 per cent is applied.

Hairdressers

For hairdressers a discrepancy analysis is used, comparing the reported revenues in the SBS survey with an estimated theoretical revenue. The latter is based on a number of assumptions: it is assumed that 10 per cent of the female and 15 per cent of the male population does not frequent a hairdresser. Furthermore, estimates are made for the number of visits by gender and age category and observed price data from CPI statistics prices are applied with a discount as informal hair dressing will be cheaper. This theoretical estimate is used as the output estimate. Intermediate consumption is estimated using the ration of direct costs of hair dressing services to output from business statistics.

Landscaping

For estimating hidden economy in landscaping is it assumed that that 50 per cent of landscapers engage in hidden activities for one day a week, during half a year. This implies a mark-up of 5 per cent to the output reported in the SBS survey of landscaping services (i.e. excluding side-products from this sector). Intermediate consumption is estimated based on SBS data, taking into account that some of the (maintenance) costs will be borne by the employer as equipment is likely to be borrowed.

Cleaning houses and buildings

The estimates for cleaning houses are based on data for the reporting year 2013 from the report "De markt voor dienstverlening aan huis" (the market for home services) by Panteia published in 2014. Based on this report the number of households consuming cleaning services is estimated on 13 per cent of the total. This report states that the informal market consists of 103 million working hours. Combined with an average remuneration of 10.50 euros an estimate of 1081 million euros results. Next to that 15 million cleaning hours by 1 person-businesses are added because the coverage of the Panteia report is not exhaustive in this respect. This results in an additional amount 166 million euros, giving a total estimate for cleaning of dwellings of 1247 million euros.

The 2013 estimate is extrapolated to 2015 based on the developments of the number of households and a price index:

$X_t = X_{t-1} * V_t * P_t$

Where:

X_t = estimate for year t

V_t = volume indicator for year t

P_t = price indicator for year t

In this extrapolation method the number of households in the Netherlands is used as volume indicator. The consumer price index is used as price indictor.

The resulting estimate for 2015 amounts to 1263 million euros.

Likewise an estimate is made for informal cleaning of buildings of companies. In this case it is assumed that 10 per cent of the small companies (2 – 10 employees) make use of 'underground' cleaning. This corresponds to about 287 thousand units. The same tariff as for house cleaning is used and it is assumed that cleaning requires on average 5 hours a week for 48 weeks per year. This results in an estimate 74 million euros.

Total estimate for exhaustiveness for cleaning houses and dwellings amounts to 1337 million euros. There is no estimate for intermediate consumption because it is assumed that these inputs are bought by the household or enterprise.

Babysitting and childcare

In the Netherlands one can receive an allowance from the government for child care for children in the age of 0- 12 years. This part of child care is covered in the source data (care accounts) used for making the national accounts estimates. Childcare without such an allowance is however not covered by the care accounts.

Round about 300.000 children in the age of 0 – 3 years do not get an allowance. It is assumed that for 1/3th paid care is arranged for 10 hours a week and 40 weeks a year. The hourly rate is estimated at 4 euros (75 per cent of the maximum rate). This leads to an amount of (100.000 x 10 x 40 x 4) / 10^6 = 160 million euros.

In the age of 4 to 12 years 1.300.000 children do not get an allowance. It is assumed that for 1/10th paid care is arranged for 5 hours a week and 40 weeks a year. Also for this category the hourly rate is estimated at 4 euros. This leads to an amount of (130.000 x 5 x 40 x 4) / 10^6 = 104 million euros.

For babysitting by teenagers it is assumed that all girls in the age of 12- 18 do babysitting for 2 hours a week and have a rate of 4 euro per hour. This results in an amount of 56 million euros for babysitting.

The total additional estimate for exhaustiveness in child care amounts to 156 + 104 + 56 = 316 million euros for the reporting year 2015.

Other

There is a range of other activities for which estimates concerning underground activities were included in the 2015 revision but whose impact on value added is relatively small for example unregistered taxis, ICT-repair and activities in the entertainment sector (e.g. music bands and city guides).

7.2.3.2 Methodological description of adjustments for N2 elements

Activities are qualified as illegal when related output, sales or possession of inventories of goods is forbidden by law. Mostly these activities are also not declared to the tax authorities. Illegal activities included in estimates of national accounts in the Netherlands are (i) the production and sales of drugs (further specified into cannabis, heroin/cocaine and XTC), (ii) smuggling of cigarettes and fencing, (iii) illegal copying and gambling, (iv) illegal employment by employment agencies and (v) prostitution.

In the Netherlands not all of these activities are entirely illegal. Prostitution is under certain conditions legal and may to some extent already be included in the National Accounts. However, in the approach followed initially the entire prostitution sector is estimated and subsequently adjusted for those parts that are assumingly covered in the national accounts via regular data sources. Also for cannabis the rules are less obvious as the possession and use of the drug are tolerated. Coffee shops are allowed to sell cannabis up to 5 grams per person per day and have a stock less than 500 grams. However the production and the purchase of cannabis

by coffee shops is illegal. Also for this activity initially the entire activity is estimated. The method distinguishes between the production of cannabis and its subsequent sale.

Each of the illegal estimates requires a specific methodology to estimate value added. Because of the nature of these activities, information is hard to obtain and circumstantial.

i. Drugs

In the Netherlands separate estimates are made for the production of drugs (cannabis and XTC/amphetamines) and the trafficking of drugs for which no production in the Netherlands takes place (heroin and cocaine). In the estimation methods a combination of demand and supply side based approaches is used. Domestic consumption is estimated by combining the number of users, the average quantity used and street price. The method distinguishes between type of drug (heroin/cocaine, cannabis, XTC/amphetamine), and in case of heroin/cocaine type of user (heavy addicts that have a known long addiction and recreational users). For imports, exports and domestic consumption of hard drugs (heroin/cocaine), the price information is derived from the World Drug Report (UNODC). In case of cannabis and XTC, price information is obtained from the National Drugs Monitor by the Trimbos Institute.

Cannabis

Total volume of domestic use of cannabis is estimated at 58 to 143 tons per year (KLPD, 2012, Nationaal dreigingsbeeld 2012. Georganiseerde Criminaliteit, Zoetermeer, October 2012.). For the national accounts estimate of consumption of households for 2015 a volume of 100 tons is assumed. Of this consumed volume 90 per cent is domestically produced 'nederwiet'(KLPD, 2012).

Production is estimated using seizure rates based on the above mentioned report of the KLPD 2012. Operators of the electricity network estimate that on an annual basis there are 25.000 active plantations. Annually 5000 plantations are dismantled giving a seizure rate of 20 per cent. The seizure rate for imports is assumed to be also 20 per cent.

Next to that the KLPD-report states that the average revenue per crop per plant amounts to 28,2 grams dry cannabis and a plant allows 4 crops per year.

The price for cannabis is set equal to the most used variety (nederwiet), which is annually published in the National Drugs Monitor (Trimbos).

The amount of seizures is published annually by the UN. A three year moving average is used in order to dampen incidental fluctuations in seizures.

Based on the above information estimates for output and use of cannabis are made. Consumption of households (national): volume * street price: 100.000.000 (grams) * 9,81 (euros)= 981 million euros.

Imports: seizures / (seizure rate – seizures) * import price: (14.800.000 (grams) / 0,2 - 14.800.000) * 4.70 (euros) = 278 million euros

In order to estimate total domestic production, the volume of confiscated production capacity is estimated based on the number of confiscated plants, the crop per plant and the number of crops.

Confiscated production capacity: 1,46 (million plants) * 28,2 (grams) * 4 (crops) = 165 tons

Domestic production of cannabis is estimated using the confiscated capacity and the above mentioned seizure rate. As confiscation takes place in the course of the year total production half of the confiscated capacity is assumed to be sold prior to confiscation.

Domestic production: 165 (tons) / 0.2 – 0,5 * 165 (tons) = 744 tons

In order to estimate sales, output has to be reduced by the actual confiscated cannabis. As it in unknown in what stage of the growth process the cannabis plants are when they are confiscated, it is assumed that half of them concerned market-ready cannabis.

Actually confiscated Cannabis: 0.5 * 14,6 (million plants) * 28.2 (grams) = 21 tons.

Consumption of domestically produced cannabis: 0.9 * 100 (tons) = 90 tons

Exports from domestic production: 744 (production) – 90 (domestic consumption) – 21 (confiscated cannabis) = 634 tons

Exports from imports: 14.8 / 0.2 (imports) – 14.8 (confiscated imports) - 0.1 * 100 (domestic consumption) = 49 tons

Value of exports: (634 + 49) * 4,91 (euros, export price) = 3350 million euros

Value of output: value of consumption of households + value of export – value of imports:

981 + 3350 – 278 = 4053 million euros.

The share of costs of production (both intermediate consumption and fixed capital formation) is mainly based on expert estimates as no data sources are available. For cannabis a distinction is made between production of cannabis and retail trade of cannabis through coffee shops. Costs of trade via coffee shops is set at 50 per cent of the trade margin. For other trade channels this percentage is set at 30 per cent. For re-exports a rate of 10 per cent is applied. Finally costs for production are estimated to be 40 per cent of the cost price. The cost price of production is set at half the street price. Total costs for cannabis are estimated at 1668 million euros, of which 1137 is allocated to intermediate consumption and 531 million euros to GFCF.

Heroin and cocaine

For the estimation of transactions concerning heroin and cocaine several data sources are used. The National Drug Monitor from Trimbos Institute provides information on the number of users of heroin/cocaine distinguished between heavy addicts that have a known long addiction and recreational users. For imports, exports and domestic consumption of hard drugs, price information is gathered from the World Drug Report (UNODC). The confiscated amount of hard drugs is based on data from the World Drug report of the UN. A three year moving average is used in the estimation procedure.

As the KLPD report (see above) does not provide information of seizure rates for heroin/ cocaine this rate is derived from information from a web article from Dutch broadcasting (NOS) based in information from criminal circles and is estimated at 20 per cent.

Based on the above information estimates are made.

The number of heavy addicts amounts to 14.386 and the number of recreational users to 49.803. Heavy addicts need 0.5 grams of heroin per day while recreational users use 1 gram per week. This leads to a total estimates use of 5.22 million grams.

Volume of consumption = 14386 (heavy addicts) * 0,5 (grams per day) * 365 + 49803 (recreational users) * 1 (gram per week) * 52 = 5,22 million grams.

Value of consumption: 5.22 (million grams) * 52,30 (euros, retail price per gram) = 273 million euros.

The volume of imports is estimated using confiscated drugs in combination with a seizure rate of 20 per cent.

Volume of imports: 11,1 (confiscated tons) / 0.20 (seizure rate) – 11,1 = 44,5 tons.

Value of imports = 44,5 (*1000000) * 28.70 (euros, wholesale price per gram) = 1276 million euros.

Exports are estimated as a residual item of imports and consumption of households. For the latter an adjustment is made because consumed heroin/ cocaine is less concentrated then the imported drugs in order to reduce the imported cubicle volumes (factor: 0.59). Further it is assumed that half of the exported heroin/cocaine concerns (quasi) transit trade and is no part of the Dutch economy.

Volume of exports = (44,5 (volume imports) – 5,2 (volume of household consumption) * 0,59 (adjustment for concentration)) * 0.5 (share of transit trade) = 20.7 tons

Value of exports: 20.7 * 44.17 (euros, export price) = 914 million euros

Value of imports used for domestic use and exports: (5,2 (volume of household consumption) * 0,59 (adjustment for concentration) + 20,7 (volume of exports)) * 28,70 (import price) = 682

The value of output is estimated as a residual item of the value of exports, consumption of households and imports:

Production (trade margins): 914 + 273 – 682 = 505 million euros.

Intermediate consumption is estimated as 10 per cent of trade margins, separately for domestic consumption and exports and amounts 44 million euros, leaving a value added of 460 million euros.

XTC / amphetamines

Production is estimated using confiscated XTC and a seizure rate of 20 per cent. As the Netherlands is known as the major producer of XTC imports are expected to be zero.

According to de National Drugs Monitor 2015 the number of users amounts 0,7 per cent of the population between 15 and 65 years of age. The users of amphetamines is estimated to be 0.5 per cent of this population. It is assumed that the users of XTC and amphetamines show an overlap of 60 per cent.

The average number of pills during a night is 1.3.

The street price is published annually in the National Drug Monitor.

Number of users: (77500 (XTC) + 55.300 (amphetamines)) * 0.75 = 99600

Volume of consumption of households: 99600 (numbers of users) * 1,3 (number of pills) * 52 = 7.41 million pills.

Value of consumption of households: 7.41 (million pills) * 4 (euros, street price) = 30 million euros

Volume of production = 20.1 (million confiscated pills) / 0.2 (seizure rate) = 100.1 million pills.

Volume of exports = 100.1 (production) – 7.41 (consumption of households) – 20.1 (confiscated pills) = 72,6 million pills.

Value of exports: 72.6 * 2 (half of the street price) = 145 million euros.

Value of production: 30 (value of consumptions of households) + 145 (value of exports) = 175 million euros.

De production costs of one XTC/ amphetamine pill is estimated at 0.15 euro based on information from a web article of the NOS. Intermediate consumption is estimated at 15 million euro (100.1 * 0.15) leaving 160 million euros for value added.

ii. Smuggling of tobacco and fencing

Smuggling of tobacco

In estimating smuggling of tobacco a supply side approach is used in which imports are estimated based on information about total confiscation, a seizure rate of 10 per cent and price information. The street price is assumed to be a fixed percentage (50%) of the legal sale price of cigarettes. Data about seizures are obtained from the Ministry of Finance. To smooth incidental fluctuations a 3-years moving average is applied. An expert assumption is made concerning the detection rate and is set at 10 per cent. Data availability does not allow compilation of an independent demand estimate. As the domestic production of illicit cigarettes is negligible, exports are estimated as imports minus domestic consumption.

Based on a research report by Joossens et al 2014 (Illicit cigarettes and hand-rolled tobacco in 18 European countries), the domestic consumption of illicit cigarettes is estimated at 5 per cent of total consumption of cigarettes.

Annual research by Trimbos Institute / TNS/NIPO concerning smoking habits in the Netherlands in 2014 shows that 23 per cent of the Dutch population of 15 years and older smokes and on the average 13.1 cigarettes per day (*Trimbos-instituut (2015). Factsheet continu onderzoek rookgewoonten 2014, Utrecht: Nationaal Expertisecentrum Tabaksontmoediging, (2015, april).*). Total consumption of cigarettes amount then to ca. 15.5 billion.

Based on several research reports, the import price is assumed to be 15% of the street price of illicit cigarettes. A similar assumption holds for export prices which are assumed to be 50 per cent of street prices.

Street price per cigarette: 7.43 (average price of a package of 25) / 25 * 0.5 = 0.15 euro

Volume of imports: (25,82 (confiscated hand-rolled tobacco, million cigarettes,) + 90,66 (million confiscated cigarettes) / 0.1 = 1165 million cigarettes).

Of imports round about 15 per cent is assumed to be transit trade and of no relevance to the Dutch economy.

Value of imports: (1165 (Imports) – 116,5 (confiscated imports) - 160 (transit trade)) * 0.0225 (Import price = 0.15 * street price) = 20 million euros

Volume of consumption of cigarettes: 14.073.660 (population >= 15 years) * 0.23 (percentage of smokers) * 13,1 (cigarettes per day) * 365 = 15.447 billion cigarettes.

Value of consumption of illegal cigarettes: 15.447 * 0,05 (share of illegal cigarettes) * 0,15 (euros, street price) = 115 million euros

Value of exports: (1165 (volume of imports) – 116.5 (confiscated cigarettes) – 160 (transit trade) – 774 (volume of consumption)) * 0.15 (euros) = 20 million euros.

Production = 115 (consumption) + 20 (exports) – 20 (imports) = 115 million euros.

Intermediate consumption is estimated as 10 per cent of trade margins, separately for domestic consumption and exports and amounts 11 million euros, leaving a value added of 104 million euros

Fencing

For various types of theft the value of the stolen goods is estimated. Burglary: 216 million euros (number of burglaries * average value of stolen goods, based on information from insurance companies) . Shoplifting: 952 million euros (3 year moving average derived for the Global retail theft monitor). Company theft: 252 million euros (data from the Monitor criminaliteit bedrijfsleven 2011). Car theft: 149 (data from Kalidien 2015, Criminaliteit en rechtshandhaving)). Theft from the car: 342 million euro (data from Kalidien 2015, Criminaliteit en rechtshandhaving). Bike theft: 422 million euros ((number of registered bike thefts (106639), and an assumed share of registered bike thefts (25 per cent) and the average price of a bike of 989 euros. Total damage because of theft amount to 2333 million euros.

It is assumed that 80 per cent of the stolen goods are (re)sold, the market price equals 40 %

per cent of the value and that the trade margin for the fence is 50 per cent

The estimate for production is then: 2332 * 0.8 * 0,4 * 0,5 = 373 million euros.

75 per cent of output is assumed to be linked to exports (280 million euros). The remaining 93 million euros will be allocated to consumption of households.

Intermediate consumption is estimated at 10 per cent of output: 37 million euros, leaving a value added of 336 million euros for fencing.

iii. Illegal copying and gambling

Illegal copying

Illegal copying is estimated by applying a percentage to legal purchases and an assumed price. Information is provided by controlling agents like Brein and NVPI.

It is assumed that for music and films the estimates from 2015 onwards will be zero because of the easy legal way to listen music and look films via Spotify, Netflix etc. or illegally via torrent sites. What remains is an estimate for illegal copying of games and software for a total amount of 48 million euros based on information from Brein (Anti piracy Organisation). Intermediate consumption is estimated at 10 per cent of output, leaving a value added of 43 million euros.

Illegal gambling

The output of legal Dutch gambling (stakes minus paid winnings) amounts to 2,34 billion euros. The biggest gaming industry are lotteries (47%) followed by slot machines (42%) Casino games (9%) and sport betting (1%) are the smaller branchesr (Kansspelautoriteit, 2016).

In 1964 the law on gambling ‘wet op de kansspelen (WOK)’ was implemented. In this law was determined that only permitted institutions are allowed to organise betting and in fact they are legal monopolies. The following permits are issued:

- The lottery is granted to multiple parties: the national lottery (‘Nederlandse loterij’) and some charity lotteries called the ‘Nationale Postcode Loterij’ , the ‘BankGiro Loterij’ and

the ‘VriendenLoterij’. A fixed percentage has to paid on winnings. Other revenues of a lottery must be spend on charities or are going to the State.
- All lotto games, sport betting and horse races are granted to the ‘Nederlandse Loterij’. All revenues are going to the State.
- Casino games are granted to ‘Holland Casino’. Holland Casino is the only legal supplier of casino games in the Netherlands. It is a state holding and all revenues go to the state.
- Gambling machines are only allowed in cafes, bars, restaurants and casinos. The machines must comply with several regulatory requirements.

The Gaming Authority ‘Kansspelautoriteit (KSA)’ is a Dutch independent administrative body and is regulating games of chance by granting gambling licenses, supervision of licensees, combating illegal gambling and protecting consumers from gambling addiction.

That means that all other sorts of gambling are illegal in the Netherlands. In the Netherlands tax has to be paid on the winnings.

In estimating illegal gambling a distinction is made in five types of games:

- Illegal casinos
- E-games
- Live poker
- Illegal Lotto / Toto / sports betting machines
- Commercial bingo

Total estimates for illegal gambling results in an output of 170 million euros. Intermediate consumption is estimated at 33 million euros leaving a value added of 137 million euros. For more detail on estimating illegal gambling reference is made to the report of SN on illegal gambling (see attachement).

Illegal Gambling in the Dutch National ,

iv. Illegal temporary employment through employment agencies

Based on information from the Ministry of social affairs on violation of the Law of labour by non-residents concerning ID-fraud, an estimate is made on the share of ‘illegal’ temporary employment in total temporary employment.

The ministry of social affairs has conducted several inspections over the years. Based on the findings of the inspections in the sample of employees and employment agencies, the percentage of illegally employed labourers in total mediated labour is estimated to be 3 per cent.

Illegal temporary employment (full time equivalents): 0,030 * 444 (total amount of mediated fte’s * 1000) = 13.3 thousand fte’s

Value of intermediate consumption: 13.3 * 1872 (number hours per year) * 12,66 (average fee to be paid = wages + mediation costs) = 316 million euros.

As no imports and exports are assume intermediate consumption equal total production. Intermediate consumption linked to this production is estimated at 5 per cent of production and amounts 16 million euros, leaving a value added of 300 million euros.

v. Prostitution

For the estimation of prostitution services a supply-use approach is used. Domestic turnover of prostitution services is estimated by multiplying the number of prostitutes with the number of clients per week, the price per visit and the number of working weeks in a year. The number of prostitutes is based on a research report by Van Wijk et. al, 2014 (van Wijk, A., van Ham, T., Hardeman, M. & Bremmers, B. (2014). Prostitutie in Nederlandse gemeenten: Een onderzoek naar aard en omvang, beleid, toezicht en handhaving in 2014, WODC, Den Haag) The average number of contacts per prostitute per week and average prices are based on a research study by Husen and Van Dijk (Husen, G. & van Dijk, T, 2014. In gesprek met de klant: Een onderzoek naar klanten van prostituees en hun rol bij de aanpak van misstanden. GGD Amsterdam.) stemming from 2014. Based on information from research by Van Wijk (Van Wijk, A., Nieuwenhuis, A., van Tuyn, D., van Ham, T., Kuppens, J., & Ferwerda, H. 2010. Kwetsbaar beroep: een onderzoek naar de prostitutiebranche in Amsterdam, Bureau Beke.), a stratification of prostitution is made.

In the Netherlands part of prostitution is legal. Van Wijk (2014) estimates the number of legal prostitutes on 10.500. On average municipalities estimate that 2/3d of prostitution is legal, bringing the total number of prostitutes on round about 15.750 for 2014. For the extrapolation to 2015 the growth of the male population in the age between 15 and 65 is used, resulting in 15760 prostitutes. The stratification to type of prostitution is based on Van Wijk (2010).

Table 7.4. Prostitution in the Netherlands

	Number of prostitutes	Price	Number of clients per week	Number of weeks	Turnover (million euros)
Window / street	4.975	50	20	40	199
Clubs	2.650	110	15	40	175
Escort	4.222	150	10	40	253
Home	3.913	50	10	40	78
Totaal	15.760				705

Table 7.4. shows that total prostitution in the Netherlands is estimated at 705 million euros. It is assumed that half of the output of prostitution is revenue for the 'management' and half for the prostitutes themselves.

Many prostitutes in the Netherlands are non-residents. Based on studies by Nijkamp and Daalder (Nijkamp, R., Sijtstra, M., Snippe, J. & Bieleman, B. (2014). Verboden rood in beeld: Onderzoek aard en omvang niet-legale prostitutie in 2014. Intraval, (2014, september), Daalder, A.L. (2015). Prostitutie in Nederland anno 2014. Rapport WODC.) it is estimated that 55 per cent of prostitutes does not have the Dutch nationality of which half is also non-resident. This implies that 99 million of turnover of prostitution concerns import of services (28 per cent of 353 million euros). Domestic production can then be estimated at 705 – 99 = 607 million euros (differences due to rounding).

Based on several research studies the share of prostitution services consumed by non-residents is estimated at 23 per cent resulting in an amount of 162 million euros of export of services. The consumption of prostitution services by Dutch residents abroad is assumed to be negligible.

Estimates on the share of intermediate consumption stem from earlier work by Statistics Netherlands and were based on expert estimates. Intermediate consumption of prostitutes cover the use of condoms and clothing and, in case of escorts, transportation. Adjustments on

consumption of households are made for these expenses by reallocating a part to intermediate consumption. For the managers it is assumed that intermediate consumption is 50 per cent their output.

For non-benchmark years extrapolations are made based on the development of the male population aged 15-65. Prices are assumed to increase with the consumer price index.

Double counting

Part of illegal economy will be included in observed data in SBS (for example coffee shops). Next to that consumption of households will include some intermediate expenses for illegal activities (for example clothing for prostitutes). Adjustments are made for this double counting. In the production approach the adjustments amount 512 million for output and 421 million for intermediate consumption.

7.2.3.3 Methodological description of adjustments for N3 elements

Own account construction

The estimate for own-account construction is based on a report of the Economic Institute for Construction industry (EIB)[28] dating from September 2004. This report presents the results of a research project concerning own-account construction. For a large number of construction projects for which a building permit was given the EIB investigated whether the project was carried out in own-account or by a construction enterprise. Of all construction projects in which a non-government unit and no housing corporation is the principal, 27 per cent was carried out on own account. Based on the number of permits for this category and the involved costs of construction an average 'price' of own account constructed dwelling is estimated. Multiplying the actually in 2015 finished dwellings with the average 'price' results in an estimate of 208 million euros for own account construction. Intermediate consumption is estimates using the existing ratio of intermediate consumption and output for the construction of dwellings.

Tips

There is in general a lack of data on tips and so it is necessary to rely to a large extent on expert guesses for this estimate. Research showed that about 75 per cent of taxi services concern pre-arranged trips, for which it is unlikely that a significant amount of tips is being received. For the remaining 25 per cent we assume an average tipping rate of 5 per cent. The resulting value is augmented with 10 per cent to take into account tips for pre-arranged trips.

Tips restaurants, bars and hotels are estimated as 3 per cent of the production value reported in the business survey, while for hotels 0,5 per cent is used reflecting the fact that more frequent use is made of electronic payment.

[28] EIB, Drs. E Lourens September 2004, Bouwen in eigen beheer en onrechtmatige bedrijfsuitoefening in 2003 (Own-account Construction en illegal/black Construction in 2003)

Own account energy production

The energy production by households is estimated using SN data on the physical output of solar energy by households (780 million Kwh in 2015) multiplied by the consumer price (i.e. including taxes on products, 0,23 euro in 2015) derived from source data for the CPI. This price including taxes on products is the 'basic price' because it is the amount households receive for the surplus of electricity they deliver to energy producers. Total output amounts to 176 million euros. (differences due to rounding)

Renting of dwellings

The estimate for Airbnb-type activities is based on rental data of internet mediation fora covering 80 per cent the market. For 2016 the received rental amounted 188 million euros. Estimates for 2015 are extrapolated backwards using the (volume) change of the number of accommodations, resulting in 158 million euros of rentals. For the obligatory cleaning an additional estimate is made based on the number of visits and an average price of 30 euros resulting in an amount of 14 million euros. Grossing up results in an estimate of 215 ((158+14)*1.25) million euros for (gross) output for the airbnb-type activities.

In the estimation procedure for imputed rents of owner occupied dwellings (see chapter 3 for details) no adjustment is made airbnb-type activities. The double counting of imputed rents and Airbnb-type activities is estimated at 51 million euros based om the time the dwelling is not available for the owner. This implies that net output for Airbnb-type activities amounts to 164 million euros.

Intermediate consumptions consists of costs for energy, cleaning products, some food products and last but not least the fee for the intermediation by the platform. Intermediate consumption is estimated at 50 million euros.

Other

This item concerns allotments where people grow some potatoes and vegetables.

7.2.3.4 Methodological description of adjustments for N6 elements

Cost fraud

Cost fraud is assumed only to occur in small enterprises having less than 10 employees. Further it is assumed that a certain percentage of the cost items mentioned below can be attributed to cost fraud: costs of transport: 2 per cent, sales costs: 2 per cent, costs of communication: 5 per cent, other general costs: 5 per cent. Applying these assumptions lead to an estimate for cost fraud of 763 million euros.

From a production perspective cost fraud is visible as an adjustment on intermediate consumption (see item N6 in the process table of chapter 3). From an expenditure perspective an additional estimate for consumption of households of 763 is made (see item N6 in the process table in chapter 5).

VAT-gap

Elimination of VAT gap

Non-deductible Value Added Tax (VAT) is included as a separate 'product group' in the supply and use tables (SUT): this concerns non-deductible VAT on purchases by households, enterprises on fixed capital formation and intermediate consumption linked to VAT-exempted activities. The main examples are government, banking, insurance and health services. VAT paid on inputs for the production of exempted goods and services from VAT cannot be deducted.

Two estimates are available for the VAT, the theoretical VAT that is estimated by applying the VAT-rates to all concerning transactions and the (accrual) VAT that is actually received by the government. In order to align the final VAT-estimates in the SUT tables with the government data a twostep approach applied. First, the theoretical VAT is estimated in the SUT. In the second step, adjustments are made to align this estimate with the government receipts.

Theoretical VAT

If applicable the actual VAT rate is applied to each individual transaction for estimating VAT for households and industries. The calculation of VAT is carried out on the highest level of detail (products and industries) available in the SUT.

For the calculation with industries, the share of exempted goods and services in total output is determined first. Assuming that for the tax-exempt output within an industry the same intermediate inputs are used as for the taxable output, VAT can be compiled by multiplying the intermediate consumption with the VAT rate and the exemption fraction for every separate product group. The sum over all product groups is the total non-deductible VAT for the concerning industry.

Example

Total output of industry X is 10 000. The output of this industry includes a number of products which are exempted from VAT. Production of these products is worth 2 000, giving an exemption ratio of 2 000/10 000 = 0.2.

Total intermediate consumption in this industry category amounts to is 8 000; 1 000 is subject to the reduced VAT-rate (6 per cent) and 4 000 to the standard VAT-rate (19 per cent). This gives VAT payments of 1 000 * 6% + 4 000 * 19% = 820.

Assuming that the input structure for exempted output is similar to the input structure of taxed output, non-deductible VAT is then estimated as 820 * 0.2 (= exemption ratio) = 164.

In the Dutch supply use tables VAT is calculated on taxed transactions irrespective whether it concerns 'white' or hidden economy. Only sales of products that are in all circumstances illegal (for example sales of cannabis or cocaine, which is always illegal as opposed to for example prostitution) are not included, as the VAT rate for these products is zero. This implies that in this calculation of theoretical VAT, the VAT not being transferred to tax authorities is included. Therefore the actual VAT-receipts by the government are lower than the theoretical VAT. For the benchmark year 2015, this VAT gap amounts to 1618 million euros.

Breakdown of VAT gap

In order to make adjustments on the theoretical VAT in order to align with accrual government receipts, the VAT gap can be split into different parts, see table 7.5

Table 7.5 Missing VAT receipts by origin

Underground production and illegal activities	622
Other exhaustiveness	107
Consumption of non residents in the Netherlands	52
Small producers	139
Bankruptcy	264
Intra-community fraud	434
Total missing VAT	1618

- No VAT is paid to tax authorities on purchases of underground goods and services and most illegal activities. Exceptions are illegal activities which are recorded as legal activities, as may happen in case of prostitution. The missing VAT from these underground and informal activities can directly be estimated from the adjustments for exhaustiveness headed under the N1 and N2 adjustments. After all, these adjustments provide a direct estimate of the sales and purchases that are not registered in tax reports. The theoretical VAT on these adjustments is for 2015 estimated at 622 million euros. The largest adjustments are made for underground construction and for prostitution.
- For some other (N3) adjustment for exhaustiveness, theoretical VAT is calculated, but not paid to the government. This is the case for own account energy production, for tipping and for rental of dwellings by owner-occupiers. Just like illegal activities, the theoretical VAT can directly be calculated from the adjustments for exhaustiveness. For 2015, this amounts to 107 million euros.
- Tourist in the Netherlands from outside of the EU do not pay VAT or can get a VAT-refund on some of their purchases that they take home in their personal luggage. Examples are electronic devices, alcoholic beverages and clothing. About 1 in 5 foreign tourists to the Netherlands are from outside the European Union. However, as (outside purchases on the Airport) some action is required for the tourist get a VAT-refund, there will in practice be no 100 percent refunding. It is assumed that tourist outside the European Union get a VAT-refund on half of their purchases of goods that they take home in their personal luggage. Therefore, no VAT is paid on 10 per cent of the purchase of these goods by foreign tourists. For 2015, this amounts to 52 million euros.
- In the Netherlands, companies that have to pay less than 1883 euros on VAT (calculated as the VAT on their sales less the VAT on their purchases) on an annual basis get a deduction on their VAT bill. Companies whose VAT-bill is less than 1345 euros do not have to pay any VAT at all. As the companies do have to declare tax accounts to the authorities, the ministry of finance knows the exact amount of VAT that they missing due to this deduction scheme. For 2015, it amounted to 139 million euros.
- Another reason for missing VAT are bankruptcies. There are two mechanisms that may lead to missing VAT. First, companies that are bankrupted may not pay the VAT that they owe. Second, companies that have sold goods to bankrupted companies and did not get paid, can get a VAT-refund from the government. Data from the tax authorities show that for 2015, the missing VAT due to bankruptcies amounts to 264 million euros.

- Above estimates for missing VAT sum up to 1184 million euros out of the VAT gap of 1618 million euros. For the remaining 434 million euros, it is assumed that this is due to intra-community trade. With intra-community fraud, a company imports goods from another European country, on which no VAT is levied. It subsequently sells the goods in the Netherlands, in which case VAT is levied. However, the company does not pay this VAT to the government and this scheme therefore results in missing VAT. Europol estimates that in the European Union, each year around 50 billion euros is lost due to intra-community fraud. The estimate of 434 million euros would mean that as a percentage of inhabitant or as a percentage of foreign trade, the Netherlands' losses on intra-community trade are far below the European average.

Adjustments made

For underground production and illegal activities, other exhaustiveness, and consumption of non-residents in the Netherlands, theoretical VAT is calculated for the buyers but not actually paid (mutual agreement). This concerns final consumption of households, gross fixed capital formation, intermediate consumption owner occupied dwellings (for underground construction) and export of services (for consumption of non-residents in the Netherlands). For these types of missing VAT the amounts are subtracted from the concerning expenditure category. In case the purchaser is a final consumer, this leads directly to a reduction of the estimate for GDP and GNI.

For the other types of missing VAT, VAT has been paid by the buyer of the goods or services. The seller of the good however did not hand this VAT over to the tax authorities. The missing VAT should therefore be subtracted from the VAT paid by the seller of these goods and services to the government. In the SUT however, paid VAT is attributed to users that are not allowed to deduct their VAT on purchases, i.e. final users and producers of VAT-exempted goods and services. Deduction of the non-handed-over VAT by enterprises therefore leads to negative payments of VAT by these companies. This negative VAT-payments are accepted as the most transparent way to record this missing VAT in the SUT . As the missing VAT is attributed to intermediate users, value added increases while VAT decreases so there is no effect on GDP and GNI.

Table 7.6 shows the adjustments on VAT by user.

Table 7.6 Adjustments for missing VAT

Household consumption	-484
Gross fixed capital formation	-112
Export of services	-52
Intermediate consumption of owner occupied dwellings	-133
Other intermediate consumption	-837
Total	-1618

7.2.3.5 Methodological description of adjustments for N7 – N8 elements

Dutch estimates for N7-elements concern only -income in kind. Other items of exhaustiveness headed under N7 such as production for own final use, partial nonresponse and secondary

activities are already covered in the source data e.g. business surveys and are therefore not reported under N7.

Income in kind

In the national accounts compensation of employees includes wages and salaries in kind resulting both from (additional) output and intermediate consumption. Wages and salaries in kind exclude expenditure that benefits the employer because it is necessary for the production process, such as business travel expenses. However, the meals enjoyed during the business travel are not part of this exclusion. The reason is that the corresponding meal at home is saved by the employee. The exclusions, besides the business travel expenses the expenditure for clothing used mainly at work is another example, are not treated as wages and salaries in kind, but are part of the intermediate consumption in the concerning production process.

Company cars

In the Netherlands the use of a company car is taxed via wage taxes. Therefore the exhaustive information on wage tax (see chapter 4 for more details) is a perfect starting point for estimating wages in kind of company cars is. Both the amount taxed and the number of employees making use of company cars is input in the estimation method.

The amount taxed is a percentage of the catalogue value of the car. The percentage varies with the environmental friendliness of the car between 4 and 25 per cent.

The RAI-data centre provides information on the value and tax rate of the fleet of lease cars in the Netherlands which is the base for estimate of the average tax rate of 18.4 per cent.

The catalogue value of the total lease fleet for employees can then be estimated as:

Total taxed amount for private use of lease cars (derived from tax data) / average tax rate =

3053 million euros / 0.184 = 16594 million euros.

The annual fee (excluding fuel to be paid by companies) is a certain percentage of the catalogue value. Based on internet research with a number of lease companies and different types of cars, a percentage of 19,5 is estimated. Company costs of lease car (both intermediate consumption and wages in kind) will then be: 16594 * 0,195 = 3231 million euros.

A research report from the umbrella organisation of lease companies on the private use of lease cars (Ecorys VNA Privégebruik auto van de zaak, 2015) shows that 61 per cent of mileage is for private purposes. Wages in kind for the use of company cars (excluding fuel) is then estimated at: 3231 * 0.61 = 1991 million euros.

Table 7.7 summarizes the estimation of wages in kind for company cars.

Table 7.7 Wages in kind company cars

a. Taxed amount for private lease cars (million euros)	3053
b. Average taks rate	18,4
c. Estimated catalogue value of the lease cars (a/b)	16594
d. Annual fee as percentage of catalogue value	19,5
e. Annual costs of lease cars (c*d)	3237
f. Share of private mileage in total mileage of lease cars	61
g. Estimate of wages in kind (e*f)	1991

The estimate in table 7.6 concerns only the use of the car. However lease contracts may include fuel and for those cases it is assumed that the company also pays for the fuel in case of private use. An additional estimate is made for the fuel part of wages in kind. Based on the number of employees using a lease car for private purposes form the tax records, the average number of monthly kilometres they drive, the price of fuel (petrol, gasoline), the average use of fuel per kilometre, the total costs of fuel are estimated. As 61 per cent of the lease contract include fuel an estimate for the private use of fuel paid by the company of 513 million euros results. Table 7.8 provides an overview of the estimation

Table 7.8 Costs of fuel in lease contracts

	Gasoline	Petroll	Total
a. Number of employees with a lease car	311654	220675	532329
b. Average mileage per month	1939	1939	
c. average distance per litre fuel	20	14	
d. Average use of fuel per month (litres) (b/c)	97	138	
e. Fuel price per litre (excl. VAT)	1,017	1,288	
f. Monthly costs of fuel (d*e)	99	178	
g. Share of lease conctracts inclusing fuel	0,61	0,61	
h. Average costs of fuel per month in lease contracts (f*g)	60	109	
i. Annual costs of fuel in lease contracts (million euros) (a*h*12)	225	288	513

The adjustment on intermediate consumption and wages because of the use of company cars by employees amounts to 2504 million euros (see also process table of compensation of employees in chapter 4).

In addition to the wages in kind an estimate is made for the private use of company cars by own account workers. Based on information from the internet it is estimated that of the own account workers 5 per cent leases his/hers company car. Given the number of own account workers, this implies that round about 12 percent of the total lease markets concerns own account workers. The 2504 of employees thus being 88 per cent of the lease market results in an estimate of private use of company cars by own account works of 346 million euros (https://www.fleetevent.nl/nieuws/de-toekomst-van-de-zakelijke-leaseauto/).

Free transport

Free transport services concern employees of the railways, public transport (excluding taxis) and airliners. The estimates are based on the number of employees combined with assumptions about the use of free transport and their own contribution.

Table 7.9 Free transport services

	Railways	Public transport	Airliners
Number of jobs	12696	23192	21856
Average number of household memebers per employee	3	3	3
Average number of trips	12	12	1
Price per trip	35	10	555
Own contribution	0	0	50
Free transport (millionc euros)	16	8	18

Interest discounts

The Dutch Central Bank (DNB) collects data on banking and interest discounts for the staff of banks is a separate question in the questionnaire (174 million) For the estimate of interest discounts in insurance no source information is available. The pre-benchmark of about 2/3th of the amount of discounts with banking is applied resulting in an estimate of 116 million euros.

In the estimation process of FISIM the 'additional' output for wages in kind is implicitly included, so no additional adjustment is made for the 174 million euros in the production approach.

Meals

Wages in kind include mainly meals and drinks offered by the employer in the office and during business trips. It is assumed that 2/3th of the intermediate expenses on meals and drinks should be recorded as income in kind (wages or operating surplus). The remaining 1/3th are expenses in case of exceptional working conditions and payment for company guests (customers).

These shares are not applied for traveling agencies, airliners and health care because in these cases meals and drinks are inputs in their production process. A total estimate of 2032 million euros results for income in kind. Of this amount 1748 million is attributed to wages in kind. The remaining 284 million is attributed to own account workers and thus recorded as part of mixed income.

N8 - Double counting agriculture

Because of the functional, product-based (irrespective of who is actually producing) estimates for agricultural, all side activities concerning these products in non-agricultural industries have to be removed. The impact is shown in under N8 in table 7.1.

7.2.3.6. Double counting and plausibility checks

Double counting

Value added estimated for non-observed activities may not be equal to their impact on GDP due to the issue of double counting. Some revenues may already be included in the national accounts. For instance, coffee shops (sales of cannabis) are included as statistical units in the general business register and therefore will have (at least) an imputed production as a consequence of grossing up samples. Also some expenditures may already be recorded in the accounts for instance as final consumption of households. There is therefore a need to reallocate some of these expenses. This reallocation has been done primarily for illegal activities. In a number of cases, depending on the data sources, additional estimates were included in the consumption of households.

Several plausibility checks of our estimates for non-observed activities are undertaken such as a comparison with results from the Eurobarometer survey. The comparison is made for checking the distribution across economic activities. Within each element of exhaustiveness a confrontation is made with other data whenever suitable data are available. The difference between theoretical VAT and actual VAT when negative could point at underestimating parts of the economy. The result of the benchmark revision shows a positive gap between theoretical and actual VAT receipts by government of 1618 million euros.

7.3 Allowance for exhaustiveness in the expenditure approach.

As described in the section on the production approach, for many elements of exhaustiveness a demand and supply based approach is being combined. For instance, for the estimation of drugs and smuggling, independent supply and consumption based estimates are being combined, the residual providing an estimate for exports. It must be mentioned that not all estimates for exhaustiveness of output will lead to similar adjustments in expenditure. Consumers may not always be informed whether or not a transaction is hidden. It is expected that such purchases will be included in the source data for estimating consumption of households. Similar reasoning holds for other items of final expenditure. Table 7.10 gives an overview of estimates for exhaustiveness in the expenditure approach. In general one can say that no NOE-items are balanced between production and expenditure approach before the data enter the SUT framework as intermediate consumption of illegal activities is not pre-balanced. Looking only at output of NOE-items supply and use of illegal activities are pre-balanced. For the other activities (product groups) three situations emerge:

- expenses are included the data source (for example: food and beverages)
- it is unclear whether or not the expenses are (fully) covered in the data source (for example: car repair)
- final expenditure is estimated using a commodity flow approach (for example baby and childcare and own account construction)

In case the situation concerning the data sources is unclear, in balancing it is taking into account that part of NOE-output will already be part of the initial estimates. In all case the estimates of production are considered to be more reliable and therefore leading in balancing decisions.

Table 7.10 estimates for exhaustiveness in the expenditure approach.

		Consumption of Households	Gross fixed capital formation	Exports	Imports
Activity	*Type*				
House renovations and maintanance	N1	1)	2)		
Car repair and maintanance	N1	1)			
Food/beverage service activities	N1	3)			
Hairdressers and landscaping	N1	560			
Cleaning houses and buildings	N1	1263			
Babysitting and childcare	N1	2)			
Other	N1	1)			
Subtotal		1823			
Cannabis	N2	1229	531	3103	278
Drugs	N2	303		1059	682
Smuggling cigarettes and fencing	N2	208		300	20
Illegal copying and gambling	N2	356	3		138
Temporary employment mediation	N2				
Prostitution	N2	706			99
Adjustment double counting	N2	-2050		-82	-61
Subtotal		752	534	4380	1156
Own account construction	N3		2)		
Tips	N3	3)			
Own account energy production	N3	60	543		
Renting of dwellings	N3	124			10
Other	N3	12			
Subtotal		196	543		10
Cost Fraud	N6	763			
Vat gap	N6	-484	-112	-52	
Subtotal		279	-112	-52	
Income in kind	N7	5027			
Internet sales and online trade	N7	3)		470	918
Double counting aggriculture	N8				
Subtotal		5027		470	918
Total		8077	965	4798	2084

1) *Unclear whether or not the data sources include NOE-expenses*
2) *Commodity flow method applied*
3) *Expenses are included in the data source.*

Table 7.11 provides an overview of the data sources or estimation methods for NOE-activities.

Table 7.11 Overview of od data sources and estimation methods for exhaustiveness in the expenditure method.

Activity	Type	Data source
House renovations and maintanance	N1	Inclusion in source dat unclear
Car repair and maintanance	N1	Inclusion in source dat unclear
Food/beverage service activities	N1	Commodity flow method
Hairdressers and landscaping	N1	Discrepancy analysis
Cleaning houses and buildings	N1	Research reports
Babysitting and childcare	N1	Commodity flow method
Other	N1	Inclusion in source dat unclear
Cannabis	N2	Supply - use method
Drugs	N2	Commodity flow method
Smuggling cigarettes and fencing	N2	Supply based method
Illegal copying and gambling	N2	Demand based method
Temporary employment mediation	N2	Not applicable
Prostitution	N2	Supply - use method
Adjustment double counting	N2	Expert judgement
Own account construction	N3	Commodity flow method
Tips	N3	In source daata
Own account energy production	N3	Energy statistics
Renting of dwellings	N3	Research reports
Other	N3	Various
Cost Fraud	N6	Expert judgement
Vat gap	N6	Various
Income in kind	N7	Administrative data and export judgement
Internet sales ans online trade	N7	Various
Double counting aggriculture	N8	

7.4 Allowances for exhaustiveness for the income approach

Although in the Netherlands no truly independent estimate of GPD using the income approach is made, data sources for production and income approach are compared and more or less balanced (see 6 for more details). Estimates for exhaustiveness stem from the production point of view so no independent for the income approach because of exhaustiveness are made. Nevertheless the additional estimates for exhaustiveness can be attributed to compensation of employees and mixed income based on data on production such as business surveys. As data sources differ in the coverage of income in kind, the attributed adjustments may differ for each of the GDP-approaches. Examples are the company car which are include in the tax data used for estimating wages in the labour accounts and interest discounts with banks, which are implicitly included in the estimation procedure for FISIM.

For compensation of employees additional estimates compared to the source data are made for free travel, interest discounts, tips and stock options (726 million), wages in kind (excl. company car, 1748 million) and concealed payments to regular staff (251 million).

The impact of exhaustiveness estimates on mixed income amounts to 7204. The main part of this amount is linked to illegal activities (N2, 4761 million), cleaning services and babysitting (N1, 1337 million). Hidden economy (N1), cost fraud (N6) and income in kind (N7) are partly allocated to own account workers. The remainder recorded as operating surplus of (small) incorporate enterprises.

Table 7.12 provides a breakdown of NOE value added into compensation of employees and operating surplus mixed income.

Table 7.12 Value added and its components for NOE-items

Activity	Type	Isic	production	Int. Cons.	Value Added		Wages	Operating Surplus
House renovations and maintanance	N1	41,43	1485	743	742			742
Car repair and maintanance	N1	45	213	56	157			157
Food/beverage service activities	N1	56	280	49	231			231
Hairdressers and landscaping	N1	81, 96	560	54	506			506
Cleaning houses and buildings	N1	81	1337	0	1337			1337
Babysitting and childcare	N1	88	316	0	316			316
Other	N1	multiple	373	11	362			362
Subtotal			4564	913	3651			3651
Cannabis	N2	12,56	4053	1137	2916			2916
Drugs	N2	21,47	680	59	621			621
Smuggling cigarettes and fencing	N2	47	488	49	439			439
Illegal copying and gambling	N2	59,92	218	35	183			183
Temporary employment mediation	N2	78	316	16	300			300
Prostitution	N2	96	607	214	393			393
Adjustment double counting	N2		-512	-421	-91			-91
Subtotal			5850	1089	4761			4761
Own account construction	N3	41	208	151	57			57
Tips	N3	49,55,56	567	0	567		364	203
Onw account energy production	N3	35	176	0	176			176
Renting of dwellings	N3	68	164	50	114			114
Other	N3	01	12	7	5			5
Subtotal			1127	208	919		364	555
Cost Fraud	N6	multiple	0	-763	763			763
Vat gap	N6	multiple	0	-970	970			970
Subtotal			0	-1733	1733			1733
Income in kind	N7	multiple	158	-4869	5027		4252	775
Double counting aggriculture	N8	multiple	-1839	-1327	-512			
Subtotal			-1681	-6196	4515		4252	775
Total			9860	-5719	15579		4616	10963

Compared to the process table of wages two differences have to be mentioned:

- the use of company cars by employees is covered in the source statistics and thus not part of estimates for exhaustiveness (2504 million euros).
- in wages an estimate is made for concealed payments to regular staff (251 million euros)

The latter implies a minus 251 million euros in operating surplus / mixed income.

CHAPTER 8 THE TRANSITION FROM GDP TO GNI

8.1 Introduction

This chapter describes the transition from Gross Domestic Product (GDP) to Gross National Income (GNI). Table 8.1 provides an overview of transactions, bridging GDP to GNI. These transactions include compensation of employees received from and paid to the rest of the world, taxes on production and imports paid to the Institutions of the EU and subsidies granted by the Institutions of the EU, property income received from and paid to the rest of the world. Within the property income received and paid the table provides figures for interest, distributed income of corporations, reinvested earnings on foreign direct investment (FDI) and other investment income.

Table 8.1 From GDP to GNI 2015

Transaction	2015 (mln euros)
Production	1 338 856
Intermediate consumption	718 021
Taxes on products	69 896
Subsidies on products	723
Gross Domestic Product (GDP)	690 008
Recieved from the rest of the world	
Compensation of employees	1 903
Taxes on production and import	
Subsidies	
Property income	257 098
Interest	76 226
Distributed income of corporations	170 016
Reinvested earnings on foreign direct investment	6 862
Other investment income	3 994
Paid to the rest of the world	
Compensation of employees	8 591
Taxes on production and import	3 117
Subsidies	– 1 598
Property income	248 362
Interest	70 479
Distributed income of corporations	125 846
Reinvested earnings on foreign direct investment	51 714
Other investment income	323
Gross National Income (GNI)	690 537

The Dutch Central Bank (DNB) is responsible for compiling the Balance of Payments (BoP) while Statistics Netherlands is responsible for the national accounts. From 2018 onwards the national accounts and balance of payments are being compiled according to one joined compilation process. As a result data, publication calendars and revision policies from 2018 onwards are fully harmonised.

The balance of payments statistics (DRA), a survey conducted by DNB, is an important source for the rest of the word sector, balance of payments and subsequently the GDP-GNI transition items. The DRA quarterly and annual survey data address the following institutional sectors: S.11, S.124, S.127, S.128, S.129 and S.2 (see section 9.2 for the sector classification). DNB compiles quarterly data on transactions and positions in domestic assets and liabilities and on the profit and loss account. DNB collects on annual basis data on stocks and flows of equity investments.

In addition, for balance of payments compilation purposes, DNB collects monthly data on foreign assets and liabilities and issued shares. The DRA-source includes the reporting units of special purpose entities, investment funds, custodians, clearing members, treasury centres, pension funds, insurance companies, health insurance companies. The reporting units of DNB include monetary financial institutions, non-financial corporations and government organisations.

Another important data source is "Statistiek Financiële Ondernemingen" (Statistics of finances of non-financial corporations, SFO), which consists of a survey for large non-financial corporations (SFGO) while tax data cover the smaller non-financial corporations (SFKO). SFO is the leading source for the annual S.11 accounts. The survey questionnaire is sent to all non-financial corporations with a minimum balance sheet total of € 40 million. The questionnaire contains the profit and loss account and the complete balance sheet with extensive breakdowns of changes in several financial balance sheet positions. In this way, the SFGO provides a consistent view of the current and financial transactions of the corporations involved. In other words the SFGO draws a coherent picture of the current and financial accounts. Its population consists of about 2500 corporations. Together these corporations cover around 56 per cent of the production value of S.11. With 83 per cent the response to the questionnaire is quite good. The survey is available in February of the year T+2.

The Statistics of finances of small non-financial corporations (SFKO) rely on tax data from the corporate taxes information system (VIS), which is supplied by the Dutch Tax Office. This secondary source contains corporate tax declarations and relates to legal entities. The SFKO covers non-financial corporations with a balance sheet total of less than 40 million euros. VIS information is used to compile the SFKO. However, corporations can postpone their tax declaration for a number of months or even years, so the reports have to be grossed up to obtain full coverage. The SFKO consists of around 320,000 corporations, together representing around 40 per cent of total S.11 production value.

The SFKO, and SFGO give information on balance sheets as well as the profit and loss account. However, the SFKO is less detailed than the SFGO. The SFGO and SFKO together represent the full statistics of finances of non-financial enterprises (SFO).

The SFO data consist of consolidated corporate data. Annual corporate reports are used to deconsolidate head offices of non-financial corporations.

The SFO does not cover housing corporations. Therefore, an additional source is used from the 'Authority Housing Corporations'. This source provides annual information on the financial situation of housing corporations. This is a survey and covers all housing corporations. The survey is available in year T+2.

Also, not all health care institutions are obliged to pay corporate tax, therefore an additional source called the DigiMV is used for the health care institutions. This additional source is a survey conducted by the department Health and Care of Statistics Netherlands. This source includes national statistics on income statements, balance sheet figures and staff of enterprises and groups of enterprises with main activity hospital care, mental healthcare, care for the disabled, nursing home care, home care, residential care for other persons and youth care.

Both sources DRA and SFO are further described in section 8.5. In addition to BoP, supplementary data sources, referring to non-financial corporations, financial institutions, government, households, non-profit institutions serving households (NPISH), are used to compile the GDP-GNI transition items.

8.2 Compensation of employees

Table 8.2. Process table of Compensation of employees (D1), 2015 (million euros)

Compilation of GNI	Basis for NA Figures				Adjustments					Final Estimate
					Conceptual					
	Surveys & Censuses	Administrative Records	Combined Data	Total (sources)	Allocation of FISIM	Other conceptual	Total Conceptual	Balancing	Totaal (Adjustment)	
Compensation of employees recieved from the rest of the world	1 903			1 903						1 903
Compensation of employees paid to the rest of the world		8 439		8 439		152	152		152	8 591

Compensation of employees received for the rest of the world (Surveys and censuses)

Data on the inward bound compensation of employees are derived from administrative data on income and property (Inkomens- en Vermogensstatistiek) of households. These statistics contain data on labour income received from non-resident employers.

The estimate of inward compensation of employees includes the labour income of employees (1876), directors and shareholders of businesses (24) (to be classified as employees) and other (3), giving a total amount of 1.903 million euros.

Compensation of employees paid to the rest of the world (administrative records)

Since 2006 the most important source for employment statistics (compensation of employees and accompanying labour volume data) in the Netherlands is the Tax Register of Dutch Employees as maintained by the Employees' Social Insurance Agency. The measurement of the compensation of employees is explained in detail in section 4.8.

The Tax Register of Dutch Employees provides the information on the compensation of non-resident employees which are employed by resident entities. Non-residential workers are being identified by matching all employees in the Tax Register with the Government Resident Administration. Those employees not found in the Resident Administration are defined as non-resident. Data on cross-border workers are not exchanged with neighbouring countries.

The outward cross border flows of compensation of employees are including social contributions (actual and imputed) payable by employers (ESA 2010 section. 4.09 – 4.10) and social contributions, income taxes and other payments payable by employees (ESA 2010 section 4.03). Regarding the inward cross border flows it is assumed social contributions are included.

Conceptual

Additional conceptual adjustments are made for:

- Wages paid to residents working for foreign embassies and military basis (cleaning, security, administrative functions) and non-residents working for Dutch embassies and military basis.
- Black wages of temporary employees.

8.3 Taxes on production and imports paid to the Institutions of the EU

Table 8.3 Process table of taxes on production and imports paid to the Institutions of the EU (D2), 2015

Compilation of GNI	Basis for NA Figures				Adjustments					Final Estimate
					Conceptual					
	Surveys & Censuses	Administrative Records	Combined Data	Total (sources)	Allocation of FISIM	Other conceptual	Total Conceptual	Balancing	Totaal (Adjustment)	
Taxes on production and imports paid to the institutions of the EU		3 117		3 117			0		0	3 117

Administrative records

Taxes on production and imports paid to the Institutions of the EU are treated as primary income transactions by ESA2010. The general government sector generally collects these taxes on behalf of the Institutions of the EU and represents the role of cashier. As a result, the taxes in question are recorded exclusively as primary income transactions between the paying institutional sector and the ultimate beneficiary, which are the Institutions of the EU.

The taxes on production and imports paid to the Institutions of the EU are made up of import duties paid to the EU, EU-levies on agricultural products, EU-levies on sugar stocks, and the EU resolution tax:

- The import duties paid to the EU are based on monthly declarations from the Tax Authority, using the one month adjusted cash method as an approximation for a recording on accrual basis. The listed figure in these declarations does however not make any distinction between import duties paid by residents and non-residents. This ratio (residents versus non-residents) is calculated using data from the Foreign Trade Statistics and the EU tariff rates. The ratio, which was roughly 78% for residents and 22% for non-residents in 2015, is subsequently applied to the import duties figure from the Tax Authority declarations.
- The figures for the EU-levies on agricultural products and sugar stocks are compiled using reports from the Ministry of Agriculture and are recorded on cash basis.
- The EU resolution tax is derived from data sources from DNB which is recorded on accrual basis.

8.4 Subsidies granted by the Institutions of the EU

Table 8.4. Process table of subsidies granted by the Institutions of the EU (D3), 2015

Compilation of GNI	Basis for NA Figures				Adjustments					Final Estimate
					Conceptual					
	Surveys & Censuses	Administrative Records	Combined Data	Total (sources)	Allocation of FISIM	Other conceptual	Total Conceptual	Balancing	Totaal (Adjustment)	
Subsidies granted by the institutions of the EU		–1 598		–1 598			0		0	–1 598

Administrative records

The subsidies granted by the Institutions of the EU are grants from the European Union budget to institutional units within the non-financial corporations sector[29] (S.11). These subsidies will regularly be recorded within the extra-budgetary accounts of the general government sector, as it enacts the role of cashier, by passing the subsidies along to the ultimate beneficiaries. Any EU subsidies received by the general government sector, but not yet paid out to the ultimate beneficiaries, will be recorded as accounts payable within the financial accounts.

Subsidies granted by the Institutions of the EU can largely be subdivided into:

- Agricultural subsidies, which are calculated from monthly reports that are provided by the Ministry of Agriculture and the Agricultural Equalisation Fund (LEF). These reports contain an overview of the outstanding amounts on the extra-budgetary account. The recording of these subsidies is for the most part on cash basis. Some of the agricultural subsidies can however be recorded on an accrual basis, dependent on the additional information provided by these reports.
- The research and innovation subsidies, which stem from R&D programmes such as Horizon 2020, are derived from various data sources, chief among which is the financial report that is annually published by the European Commission, containing the aggregates of the EU budget expenditure for various programmes. This information is supplemented with a list of beneficiaries from the Netherlands Enterprise Agency (RVO), in order to determine the institutional sectors that are the recipient of these subsidies. Research and innovation subsidies are recorded on an accrual basis.
- Subsidies from the European structural funds, which are also based on the financial report from the European Commission and additional data sources that list the beneficiaries of these subsidies. These subsidies are recorded on an accrual basis.

8.5 Cross-border property income

Information on property income received from and paid to the rest of the world is principally obtained from DRA (DNB). More than 2000 reporting units provide on a monthly basis information on transactions and ownership relations with foreign entities. These reporting units include corporations (financial and non-financial) and government institutions. The DRA covers the top 300 non-financial corporations, monetary financial corporations, pension funds, insurance companies, investment funds, and other financial corporations including captive financial institutions. For the reporting on financial instruments DRA uses a reconciliation

[29] Grants from the European Union budget to other institutional sectors are recorded within other ESA2010 distributive transactions, such as current international cooperation (D.74), miscellaneous current transfers (D.75), and investment grants (D.92)

model in which all components from the balance sheet at the beginning of the period to the end of the period are specified, including both accrued and cash interest payments or receipts, dividends and reinvested earnings on direct foreign investment depending on the financial instrument involved. For the DRA a population benchmark is carried out yearly.

For non-financial corporations, an important additional source is the SFO introduced earlier in this chapter. Table 8.5 shows the process table of D.4 Property income broken down by underlying transactions: D.41 Interest, D.42 Distributed income of corporations, D.43 Reinvested earnings on foreign direct investment, and D.44 Other investment income.

The DRA data is accounted for under 'basis for NA figures' in Table 8.5 process table of property income. Other sources, such as SFO, and their impact on the final estimate, are only accounted for implicitly under 'balancing'.

Table 8.5 Process table of Property income (D4), 2015 (million euros)

Compilation of GNI	Basis for NA Figures				Adjustments					Final Estimate
					Conceptual					
	Surveys & Censuses	Administrative Records	Combined Data	Total (sources)	Allocation of FISIM	Other conceptual	Total Conceptual	Balancing	Totaal (Adjustment)	
Property income recieved from the rest of the world	248 365		1 931	250 296	– 3 453		– 3 453	10 255	6 802	257 098
Interest	79 146			79 146	– 3 453		– 3 453	533	– 2 920	76 226
Distributed income of corporations	167 622		1 931	169 553				463	463	170 016
Reinvested earnings on foreign direct investment	– 656			– 656				7 518	7 518	6 862
Other investment income	2 253			2 253				1 741	1 741	3 994
								0		
Property income paid to the rest of the world	245 050		1 861	246 911	– 5 749		– 5 749	7 200	1 451	248 362
Interest	75 082			75 082	– 5 749		– 5 749	1 146	– 4 603	70 479
Distributed income of corporations	125 935		1 861	127 796				– 1 950	– 1 950	125 846
Reinvested earnings on foreign direct investment	42 829			42 829				8 885	8 885	51 714
Other investment income	1 204			1 204				– 881	– 881	323

The following paragraphs describe the sources used, compilation methods applied and explain the balancing adjustments of all the different types of property incomes. Combined data is a mixture of surveys (DRA, SFGO) and administrative data (SFKO, annual accounts). For a detailed description of conceptual adjustments for fisim we refer to paragraph 3.18.2.2.

8.5.1 Interest

Non-financial corporations, financial institutions and government

DRA covers the cross-border flows of interest with respect to almost all (sub-)sectors of the economy: non-financial corporations, financial institutions and government (ministries and several budget funds such as the Municipal Budget Fund, the Province Budget Fund and the Infrastructure Fund). DRA covers the cross-border flows of interest with respect to all relevant financial asset categories as described in ESA 2010 par. 4.43 – 4.49: deposits, loans; bills and similar short-term instruments; bonds and debentures; swaps and forward rate agreements; financial leases; bank overdrafts. The extra interest which is generated by indexation of the capital sum or market price, however is not part of this registered interest. Interest receivable and payable is unadjusted for taxes levied on interest or grants to interest relief. Interest on index-linked debt securities is part of total interest estimates. Cross-border interest on loans and deposits is adjusted for fisim (see par 3.18).

In 2010 the Netherlands had an Intra-Eurosystem ("technical") financial claim related to the issuance of euro bank notes. The associated interest flow is recorded as D.41 interest received from the rest of the world, and modelled based on the stock of the Intra-Eurosystem

("technical") assets and liabilities. The reference rate used is the Main Refinancing Operations (MRO) rate.

Data on SPE's is taken principally from DRA. However, for a number of large SPE's annual reports are used to enhance the results. This is principally done for SPE's that have quoted equity liabilities and are therefore partly or in total owned by minority shareholders giving such SPE's extra relevance for GNI.

Insurance corporations, pension funds, national foundations, water boards and social security funds

DRA data are used for the insurance corporations and pension funds. Based on annual reports, supplementary estimates are made for those entities not covered by DRA.

Examples of funds not covered by DRA are early retirement funds (VUT-funds), guarantee funds and SAIP (Stichting Administratie Indonesische Pensioenen). The figures on interest are obtained from their annual accounts.

Small adjustments are made on the figures in DRA for insurers and pension funds because of 'other income' (part of the profit and loss account). These other income flows contain among other things interest, so a fixed part of the other income item is added to the total interest. This rate is specified by insurer.

The rate for other income by insurer:	The rate for other expenses by insurer:
Indemnity insurance corporations: 3%	Indemnity insurance corporations: 0%
Life insurance corporations: 1%	Live insurance corporations: 0%
Cure insurance corporations: 3%	Cure insurance corporations: 0%
Reinsurance corporations: 36%	Reinsurance corporations: 0%
Pension funds: 2%	Pension funds: 1%

For the national foundation "Nederlandse Investeringsbank voor Ontwikkelingslanden" (NIO) the interest is also obtained from their annual reports.

Also the information on water boards is obtained from annual reports. These provide data on loans and deposits with respect to cross-border, as well as several weighted rates of interest mentioned in the annual reports. The social security funds payment of rents to non-financial corporations (health care institutions) is obtained from the annual report of "Zorginstituut Nederland".

Municipalities

For municipalities the interest is registered in administrative records: "Informatie voor derden".

Households and non-profit institutions serving households

For households and non-profit institutions serving households, the interest received by the rest of the world is obtained from DRA, although households are not part of the DRA reporting units. However, this system also contains information on a security-by-security basis, in which units report data on ISIN securities. These data are enriched with information from the Centralized Security DataBase (CSDB), such as interest accrued and the sector code.

Interest paid to the rest of the world is calculated based on different sources.

For mortgages (F.42 and long-term loans (F.42) cross-border interest is calculated by market interest rate multiplied with the average balance sheet ((opening balance sheet + closing balance sheet) / 2). The market interest rates are taken from DNB statistics. The rate used by DNB on deposits and loans is the "annualised agreed rate" This is the rate that is agreed by financial institutions and households or non-profit institutions serving households for a deposit or a loan. This rate is based on all interests paid, other expenses are not included. The rates on new contracts are computed by weighting (by amount of new contracts) of the rates of the financial institutions. Balance sheets for mortgages of households with the rest of the world are obtained from administrative data from the Tax Register. From these data, we extract micro data on the value of mortgages for banks. From information on the sector Deposit-taking corporations except the central bank (S.122), we extract the domestic part. The difference is allocated to the sector rest of the world.

Balance sheets for long-term loans of households with the Rest of the World come from mirror data from DNB. This is data from other countries that indicate that Dutch households have long-term loans in their country. From this amount, we deduct the value of mortgages with the Rest of the World and the remaining part is allocated to long-term loans.

Conceptual

A conceptual adjustment is made to interest received from and paid to the rest of the world to offset the fisim effect on trade. Cross-border interest on loans and deposits is adjusted for fisim as explained in section 3.18.

Balancing

The figures in the column 'Balancing adjustments' in Table 8.5 refer to counterpart information of SPE's... For interest paid to the Rest of the World, an additional correction has been made to include the calculated cross-border interest on mortgages. For interest received from the Rest of the World, an additional correction has been made because Statistics Netherlands changed the way of recording transactions related to the export credit insurance, in response to the Excessive Deficit Procedure Dialogue Visit by Eurostat.

8.5.2 Distributed income of corporations

8.5.2.1 Dividends

DRA is the main source for coverage of cross-border dividend flows, including dividends from direct investment as well as from portfolio investment. Cross-border flows of dividends also include shares issued to shareholders as dividend payments. According to BPM6 paragraph 8.33 and 11.29, bonus shares are not treated as transactions because no new resources have been provided. Following BPM6 paragraph 11.31, dividends are recorded gross of any withholding taxes.

Dividends from portfolio investment

The data on portfolio investment assets is collected via the DRA survey, except for households which are collected from custodians. Data on portfolio-investment liabilities, on the other hand, are collected from: (a) custodians, (b) the local central securities depository, (c) resident issuers

and (d) resident holders. This method is referred to as the "mixed approach for portfolio liabilities" in Chapter IV of the Task Force on Portfolio Investment Collection Systems' Final Report of June 2002.

Dividends from foreign direct investment

The data on dividends from foreign direct investment are collected via the DRA survey of DNB. Information is collected on equity investments, equity-related investments and various types of inter-company assets and liabilities. Reporting agents included in the sample population have to submit annual reports on the stocks of equity participations and the changes during the period including dividend and reinvested earnings within four months after the end of their financial year. For most reporters the financial year coincides with the calendar year, but not for all. Of 35% of the reporting entities the financial year differs from the calendar year. The reported annual data for profits (on investments) are then divided equally over the underlying (usually 12) months of the financial year.

Direct equity investment and other investments of Monetary Financial Institutions (MFI's) are integrated in monthly money and banking statistics. Additionally, MFI's have to report foreign direct investment dividends paid and profits retained as an integral part of their annual reports on foreign affiliates, collected for prudential purposes.

Data on SPE's is taken principally from DRA. However, for a number of large SPE's annual reports are used to enhance the results. This is principally done for SPE's that have quoted equity liabilities and are therefore partly or in total owned by minority shareholders giving such SPE's extra relevance for GNI.

For the non-financial corporations an important additional source, besides DRA is the SFGO. In general, grossing up is hardly needed as the SFGO response is very high. A gross up factor is calculated for each company on the basis of the total balance and business group of the company. For the SFKO non-response imputations are based on previous year data.

DRA covers about 90 per cent of the non-financial sector and uses a simple assumption to gross up the data. For the financial sectors DNB obtains a higher coverage (around 95 per cent). In the total SFO (SFGO plus SFKO) the dividend received is split into domestic and foreign intragroup dividends and domestic and foreign other dividends. For dividends payable only the total sum of dividends (S.1 plus S.2) is available. The cross-border flows are determined on the basis of the percentage of foreign ownership ("Buitenlandse Participatie index"; BPI) as reported by the firms.

Super-dividends

Super-dividends are dividends that are large relative to the recently observed level of dividends and earnings. According to ESA 2010 (par. 4.55) and BPM6 exceptional payments by corporations to their shareholders that are made out of accumulated reserves or sales of assets should not be treated as dividends. Such exceptional payments are treated as withdrawals of equity, and therefore should be recorded in the financial account (usually F.512).

Super-dividends are sometimes difficult to identify. Therefore, DNB made the following approach in DRA in order to identify super-dividends. Every quarter dividend payments on direct investments above 500 million euros are selected for further investigation. Amounts below 500 million euros are considered as regular dividends. This threshold is used as it is too time consuming to check all the amounts individually. After selecting all payments higher than 500 million euros each dividend payment is analysed individually to see whether the payment

is higher than usual and whether it is in line with the net operating profit from preceding periods (the ECB sets a period of five years if the company has a short history, otherwise as long as possible). The criteria of 'substantially higher' is twice the average result of the previous five years.

If the dividend is not in line with previous periods or operating profit, extra inquiries are sent to the reporting agent. If the dividends are not related to the operating profit, the reporting agent is obliged to submit new data. The dividends unrelated to current operating activities (the surplus) should be recorded as equity disposals for the same amount of dividends minus the dividend tax. Experience shows that usually there is a specific reason (restructuring or something similar) for reporting exceptionally large dividends.

The SFO data on non-financial corporations Statistics Netherlands also adjusts for super-dividends. This is done in collaboration with DNB. The same criteria as applied by DNB are used.

According to ESA 2010 (section 4.57) and BPM6 dividends are recorded at the time the share goes ex-dividend. This date is usually between the date that the dividend is declared and paid. This is close but not exactly the same as how it is reported in DRA and SFO. The DRA and SFO guidelines state the following: “Reported as 'dividend declared' should be gross dividend (before any dividend tax) that is declared by the non-resident shareholder(s). If the declared dividend is not actually paid in the same reporting period, a (short-term) obligation to the parent company must be reported during the period between the declaration and the actual payment. For direct investment the declaration date is used and for securities the settlement date of payment is used.” This causes some timing differences between months, but rarely between quarters.

Balancing

Data in table 8.5, column ‘Surveys & Censuses’ reflects DRA data. In the course of the balancing procedure of the institutional sector accounts, a data comparison at enterprise level, DRA versus SFO, is carried out in close collaboration with DNB. For the largest data source discrepancies additional analysis is done, for example through annual reports or by contacting corporation representatives. For those companies reporting substantively diverging results, a common decision was taken about their recording in the Balance of Payments and in the National Accounts.

8.5.2.2 Withdrawals from the income of quasi-corporations

ESA 2010 “4.58 Definition: withdrawals from the income of quasi-corporations (D.422) are the amounts which entrepreneurs withdraw for their own use from the profits earned by the quasi-corporations which belong to them. Such withdrawals are recorded before the deduction of current taxes on income, wealth, etc., which are deemed always to be paid by the owners of the businesses

Statistics Netherlands mainly uses data from DNB to identify and cover cross-border flows of withdrawals from the income of quasi-corporations. Income flow estimates from quasi-corporations (rents) to and from the Rest of the World (RoW) are compiled by DNB as part of the BoP. The item is an estimate for net revenue from cross-border real estate holdings. It comprises the net operating surplus for owners of land and buildings, but not for equipment.

Real estate abroad is part of the DRA-survey, which is on an accrual basis, and is in the Balance of Payments part of the foreign direct investments. Foreign ownership of real estate in the Netherlands is measured indirectly via the Dutch Land Registry (Kadaster). Based on this data monthly estimates are added. The levels of real estate are based on financial transactions (purchase values). These levels are re-valued accordingly with the real estate index (RoZ/IPD). Also income flows estimates are model based. The real estate index is used for this. The index measures returns on direct investment property, based on net open market values and without taking funding into account.

Following BPM6 paragraph 11.31, withdrawals from the income of quasi corporations are recorded gross of any withholding taxes.

Holiday homes

In addition to the information obtained from DNB, the estimated household income from holiday homes is based on information on foreign owned dwellings as obtained from the tax authorities. This information is from 2007 onwards collected as part of the income tax assessment forms.

The total number of holiday homes in the Netherlands amount to 125,400 of which 10% is estimated to be owned by enterprises. A preliminary estimate shows that of the privately owned holiday homes 34,044 are owned by non-residents.

Table 8.6 Decomposition of number of holiday homes

		Number
Total		125 400
Owned by enterprises		12 540
Privately owned		112 860
of which		
Resident owner		78 816
non-resident owner		34 044

Total rents of holiday homes in the Netherlands is estimated to be 2033 million euros of which 618 million euros accounts for imputed rents.

Holiday homes in the Netherlands owned by non-residents

The number of holiday homes in the Netherlands owned by non-residents amounts to 34,044. Using data from the Register on addresses and buildings an annual imputed rent is estimated at 286 million euros using a stratification method (region, floor area, year of construction).

Based on statistics on overnight stays, the occupancy by the owner is estimated at 65 per cent, implying an actual imputed rent of 186 million euros.

The remaining 35 per cent of time the holiday homes are rented to third parties for an average weekly rent of 689 euro's. This rent is a weighted average of quarterly data with the occupancy as weights. This results in an amount of 427 million euros of actual received rents.

Total 'output' amounts to 613 million euros.

The costs for maintenance of holiday homes is estimated at 2 per cent and depreciation of 3% of total capital value, amounts to 285 million euros, leaving an amount of 328 million euros for property income (D422).

Holiday homes abroad owned by residents

Based on tax declarations data the number of holiday homes abroad owned by residents amounts to 157,638. As only the capital value of the holiday homes is available, the estimate for imputed rents is based on the capital value method. EU guidance require either the stratification or a capital value methods. The capital value foresees in an acceptable estimate of imputed rents for holiday homes abroad of 968 million euros.

It is assumed that the statistics on overnight stays giving an occupancy by the owner of 65 per cent is also applicable to holiday homes abroad, implying an actual imputed rent of 629 million euros.

The remaining 35 per cent of time the holiday homes are rented to third parties for an average weekly rent of 594 euro's. This rent is a weighted average of quarterly data with the occupancy as weights. This results in an amount of 1743 million euros of actual received rents.

Total 'output' amounts to 2.372 million euros.

The costs for maintenance of holiday homes is estimated at 2 per cent of capital value and the depreciation of 3% of capital value, amounts to 880 million euros, leaving an amount of 1,492 million euros for property income (D422).

Table 8.7 Imputed and actual rents, and property income of holiday homes

	Residents	Non-residents
Number of holiday homes	157.638	34.044
Imputed rents	968	286
Occupancy by owner	65%	65%
Actual imputed rents	629	186
Actual received rents	1.743	427
Total 'output'	2.372	613
Costs	880	285
Property income (D.422)	1.492	328

The total impacts of these estimations of holiday homes (domestic and abroad) on GDP and GNI are on balance +0.3 billion and +1.5 billion respectively.

8.5.3 Reinvested earnings (RIE) of foreign direct investment (FDI)

According to ESA 2010 section "4.65 Definition: A foreign direct investment enterprise is an incorporated or unincorporated enterprise in which an investor resident in another economy owns 10 per cent or more of the ordinary shares or voting power in an incorporated enterprise, or the equivalent for an unincorporated enterprise. Foreign direct investment enterprises comprise those entities that are identified as subsidiaries, associates and branches. A subsidiary is where the investor owns more than 50 %, an associate is where the investor owns 50 per cent

or less, and a branch is a wholly or jointly owned unincorporated enterprise. The foreign direct investment relationship may be direct or indirect as a result of a chain of ownership. 'Foreign direct investment enterprises' is a broader concept than 'foreign controlled corporations'." DNB defines a foreign direct investment enterprise as an entity subject to control or a significant degree of influence (ownership of more than 10 per cent) by a direct investor that is resident in another country.

According to ESA 2010 paragraph "4.64 Definition: reinvested earnings on foreign direct investment (D.43) are equal to: the operating surplus of the foreign direct investment enterprise plus any property incomes or current transfers receivable, minus any property incomes or current transfers payable, including actual remittances to foreign direct investors and any current taxes payable on the income, wealth, etc., of the foreign direct investment enterprise."

DNB is responsible for collecting and publishing Balance of Payments and International Investment Position (IIP) data, as well as FDI-data (including RIE). For this purpose it uses the DRA-surveys as well as data from other sources such as those of Statistics Netherlands.

In practice DNB uses the Direct Influence/Indirect Control Method to capture indirect links within large company groups (multinational enterprises). The Direct Influence/Indirect Control Method is described in the OECD Benchmark Definition of Foreign Direct Investment (fourth definition 2008).

Paragraph 496: "The Direct Influence/Indirect Control Method (DIIC) includes in direct investment all enterprises of which the voting power is 10 per cent or more directly owned, plus all enterprises that are controlled by them (ownership of more than 50 per cent of the voting power), plus all other enterprises in a continuous chain of majority ownership."

For foreign direct links, there is a direct investment relationship if the ownership is higher than 10 per cent. For foreign indirect links, there is an indirect relationship if the ownership is higher than 50 per cent. Companies report in DRA profits and dividends receivable or payable by (direct) investment enterprises. Companies are instructed to include indirect profits in the profit estimate. The largest multinationals are asked to provide an up-to-date company structure. For most of the non-financial companies the data for the Dutch entities that are part of the same group are reported on a consolidated basis if the ownership is 50 per cent or more. If the ownership is less than 50 per cent, the reinvested earnings are not consolidated. Reinvested earnings (according to the ESA 2010 definition) can be derived from the DRA by subtracting distributed dividends from operational profits.

DNB instructs both financial as well as non-financial corporations to report operational income, excluding exceptional gains and losses like impairments or gains from the sale of a group company. If profits or losses are exceptionally high, verification is done through annual reports or by contacting corporations. The second source for data on inward and outward direct investment flows of non-financial corporations is the SFO survey of Statistics Netherlands. From the SFO for outward investment the total direct investment income is known for both domestic and foreign subsidiaries, as well as a split in dividends and reinvested earnings. The inward direct foreign investment flows are determined on the basis of the percentage of foreign participation ("Buitenlandse Participatie index"; BPI) reported by the Dutch respondent. The results and dividends paid are multiplied by this factor to determine payments to foreign investors.

DNB covers about 90 per cent of the non-financial sector (DRA) and uses a simple assumption to gross up the data (based on the grossing up of 2003 figures). For the National Accounts Statistics Netherlands replaces this grossing up adjustment by data from the SFO on entities covered in the SFO but not the DRA plus imputations and sampling corrections made by the

SFO covered by neither the SFO nor DRA. For the financial sectors DNB has a higher coverage (around 95 per cent).

Surveying of the financial corporations is coordinated via registers maintained by DNB. For the non-financial sector, the Statistical Business Register (SBR) of Statistics Netherlands is used as a means of coordination. This register is strongly linked to the Chamber of commerce register. The Chamber of commerce has a very high coverage of all the companies active in the Netherlands. For Special Purpose Entities (SPEs) DNB uses information from trust companies as an additional source. A small part of the SPE population is recognised by Statistics Netherlands as 'SPE-top'. Those entities are special cases: their domestic subsidiaries are large (balance >40 million euro) non-financial corporations (NFC) or financial corporations. The RIE of the subsidiaries are shifted to SPE-top (domestic parent). This shift is GNI neutral in the sense that the RIE totals are not adjusted.

Data on SPE's is taken principally from DRA. However, for a number of large SPE's annual reports are used to enhance the results. This is principally done for SPE's that have quoted equity liabilities and are therefore partly or in total owned by minority shareholders giving such SPE's extra relevance for GNI.

The method used to compile RIE is method 1: Profits and distributed earnings of direct investment enterprises are from the same source(s), typically FDI surveys or administrative information.

Concerning the time of recording, reinvested earnings on foreign direct investment are recorded when they are earned. Reporting agents included in the sample population have to submit annual reports on the stocks of equity participations and the changes during the period including dividend and reinvested earnings within four months after the end of their financial year. For most reporters the financial year coincides with the calendar year, but not for all. 35% of the reporters have a broken financial year, which differs from the calendar year. The reported annual data for profits (on investments) are then divided equally over the underlying (usually 12) months of the financial year.

Balancing

Data in table 8.5, column 'Surveys & Censuses' reflects DRA data. In the course of the balancing procedure of the institutional sector accounts, a data comparison at enterprise level, DRA versus SFO, is carried out in close collaboration with DNB. For the largest data source discrepancies additional analysis is done, for example through annual reports or by contacting corporation representatives. For those companies reporting substantively diverging results, a common decision was taken about their recording in the Balance of Payments and in the National Accounts.

8.5.4 Other investment income

8.5.4.1 Investment income attributable to insurance policy holders

Property income attributed to insurance policyholders (D.441) is derived from the DRA survey for insurance companies and pension funds and the supervisory reports – both from DNB. To calculate cross border flows, a distinction is made between different kinds of insurance: individual life insurance, health insurance, non-life insurance and reinsurance. This is necessary

because all these types of insurance have different counterparts and different ratios for calculating the RoW parts.

Property income paid by the Netherlands and attributed to policyholders

General

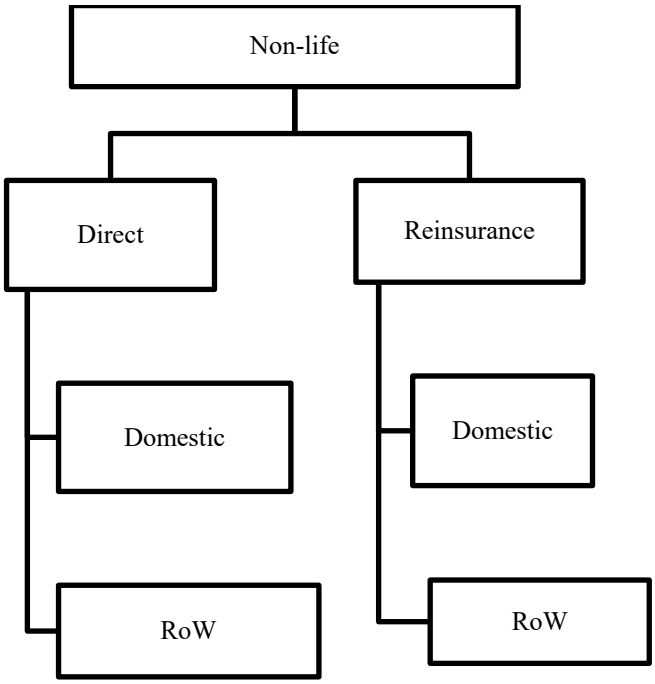
The basis for the RoW estimates is the calculated investment income for all kinds of insurance for Dutch insurance companies. For all kinds of insurance companies the value of D.441 is based on the sum of investment returns on total (actuarial) reserves minus paid interest. In practice this means all D.4 resources plus received net rentals minus paid interest D.41. DRA contains for all kinds of insurance companies figures for all these transactions, but they are revenues on the total invested funds, including own funds. Revenues on own funds are not attributed to policyholders, so the total investment income is divided using the ratio between investment income on the non-technical account and the total investment income, based on supervisory data. Except for professional reinsurance companies, which are based on DRA data.

After this split the calculation of the investment income attributed to policyholders is generally analogous, but slight differences appear for each kind of insurance companies.

Non-life insurance companies

Non-life insurance companies, except health insurers, offer two kinds of insurance: direct insurance and reinsurance. Both kinds of services, and thus the associated investment income, have a RoW part which is calculated in different ways. Figure 8.1 shows an organogram of non-life insurance companies and their relation to the Rest of the World.

Figure 8.1 Non-life insurance



As a first step, the investment income attributed to policyholders is split in parts associated with direct insurance and reinsurance, based on the ratio of premiums received from direct insurance and reinsurance.

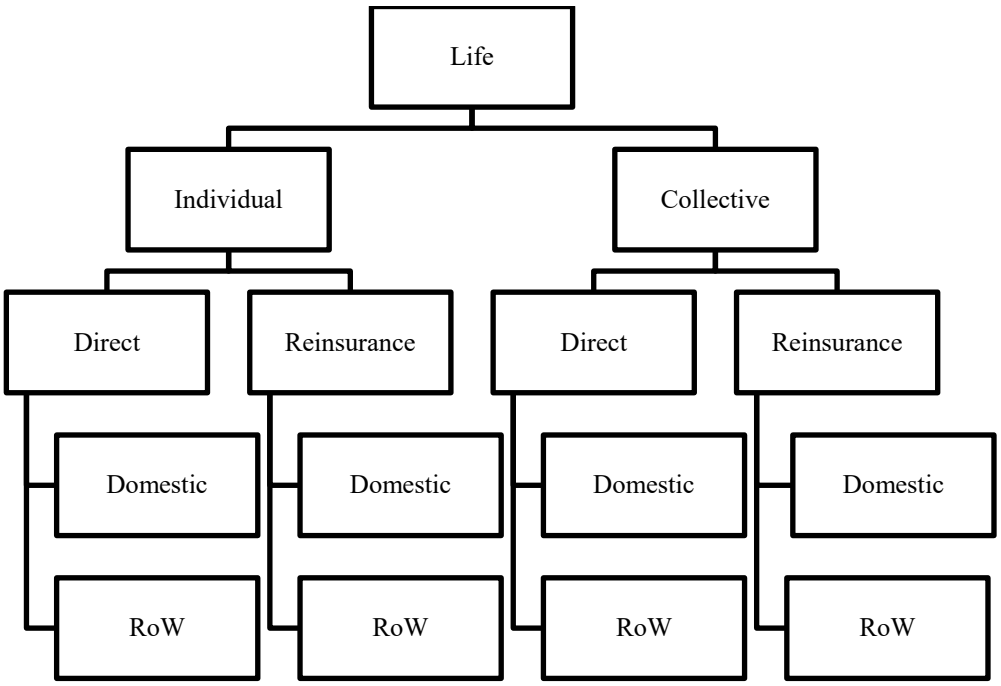
As a second step, the ratio between premiums received from abroad and total received premiums is used to derive the estimate of the flows crossing the border; for direct non-life insurance this ratio is derived from supervisory data and for indirect insurance (reinsurance) this is derived from DRA data.

Health insurance companies do attribute investment income to their policy holders, but they are all domestic, so there's no RoW part. We therefore do not describe this kind of insurance here any further.

Life insurance companies

For life insurance companies the calculation is a bit more complex, because life insurance companies provide both individual life insurance policies and collective life insurance policies. The latter have to be registered as pension schemes, so the associated investment income is registered as D.442. Besides, life insurance companies can act as direct insurer, but also as reinsurer; all investment income on reinsurance policies is registered as D.441. Figure 8.2 provides a comprehensive organogram of different kinds of life-insurance services.

Figure 8.2 Life insurance



To estimate the D.441 belonging to direct individual life insurance we use the total investment income attributed to policyholders as a starting point and then multiply this first with a ratio between individual life insurance premiums and total life insurance premiums (based on supervisory data) and then with a ratio between direct life insurance premiums received and total premiums received (based on DRA data). The RoW part is subsequently calculated by

multiplying with the ratio between life insurance premiums received from abroad and total life insurance premiums (based on supervisory data).

To estimate the D.441 belonging to reinsurance of life policies (reinsurance of both individual and collective life insurance risks) we also use the total investment income attributed to policyholders as our starting point and then multiply this with the ratio between life reinsurance premiums received and total premiums received (based on DRA data). The RoW part then is calculated by multiplying with the ratio between life reinsurance premiums received from abroad and total indirect life insurance premiums (based on DRA data).

Finally the rest of the investment income attributed to policyholders (associated with the direct collective life insurance premiums) is registered as D.442.

Reinsurance companies

Professional reinsurance companies also attribute investment income to their policyholders, being other insurance companies and pension funds. They reinsure both life and non-life risks, but this distinction is not necessary for the calculation of D.441.

The investment income attributed to the policyholders must be registered as transaction D.441 completely. The RoW part is calculated by multiplying with a ratio between reinsurance premiums received from abroad and total reinsurance premiums received (based on DRA data).

Property income paid to the Netherlands and attributed to policyholders

With regard to life insurance policies we assume domestic households do not hold any claims or entitlements on insurance companies abroad. We also assume no individual insurance policies of Dutch employees are under foreign insurance companies.

For non-life insurance and reinsurance (re)insurance policies may exist between domestic policyholders and insurance companies abroad. Property income paid to Dutch policyholders (financial and non-financial enterprises) by foreign non-life insurance companies is estimated as 5 per cent of the value of domestic (non-life) property income, based on figures from the International Trade Statistics on cross border premiums and claims. Property income received on foreign reinsurance is estimated to be around 50 per cent of the value of domestic (reinsurance) property income, based on the figures on reinsurance premiums abroad from the main source DRA.

8.5.4.2 Investment income payable on pension entitlements

Property income paid by the Netherlands and attributed to policyholders

Investment income payable on pension entitlements (D.442) is attributed to participants in pension schemes and collective life insurance schemes.

The calculation of D.442 for collective life insurance policies is already described in the previous paragraph under the heading ‘Life insurance companies’ The RoW part is calculated by multiplying the D.442 total by the ratio between collective life insurance entitlements abroad and total collective life insurance entitlements (based on DRA data).

The calculation of D.442 with pension funds is calculated analogous to the method in the previous paragraph. The RoW part is calculated by multiplying with the ratio between pension premiums received from abroad and total pension premiums (based on supervisory data).

Property income paid to the Netherlands and attributed to policyholders

For pension entitlements there's also no evidence that there are claims/entitlements of domestic households on insurance companies abroad.

8.5.4.3 Investment income attributable to collective investment fund shareholders

Cross-border flows of investment income attributable to domestic shareholders of foreign collective investment funds

Foreign investment funds pay dividends (D.4431) to Dutch shareholders. The cross-border dividends received by subsectors S.124, S.127, S.128 and S.129 are reported in the DRA. This source also covers the cross-border dividends of investment funds paid to subsectors S.11, S.14 and S.125.

Foreign investment funds' retained earnings (D.4432) are allocated to Dutch shareholders. In relation to the BoP (BPM6) revision DNB developed a method to estimate the retained earnings of foreign investment funds. About 35 per cent of total cross-border positions in foreign investment funds are reported to the Dutch Central Bank, using an ISIN code. This ISIN code contains additive information on the category of investment (money market, bond, equity, real estate, hedge, mixed, other). The 65 per cent of total cross-border positions in foreign investment funds that report without ISIN code is classified as investments in other funds. Per investment category the yields are estimated. The average weighted yield is calculated per sector, per country. Subtracting paid dividends results in the retained earnings per sector and country.

Cross-border flows of investment income attributable to foreign shareholders of domestic collective investment funds

Dividends (D.4431) from Dutch investment funds receivable by foreign policy holders are reported in DRA results obtained from Dutch investment funds. The DRA obtains data on dividends from Dutch investment funds of which foreign beneficiaries are explicitly reported.

Part of the retained earnings (D.4432) from Dutch investment funds must be allocated to foreign investors. Total retained earnings of Dutch investment funds are calculated as follows:

Resources D.41 (excl. fisim) + Resources D.42 + Resources D.43 + Resources D.4431

+ Resources D.4432 + domestic rent – Uses D.41 – Uses D.42 – Uses D.43 – Uses D.4431

= Uses D.4432

All resources and uses of D.4 are available from the DRA reporting obtained from investment funds. Attributable investment income (D.4432) is divided between domestic and foreign shareholders based on balance sheet information (of F.522). The share of S.2 in the total balance sheet position (F.522) determines the foreign attributable investment income (D.4432).

After international consultation it emerged that incomes from foreign investment funds were incorrectly recorded after deduction of the costs which foreign investment funds incur but do not explicitly pass on to investors. In this revision the costs of foreign investment funds have now been passed on to the ultimate Dutch investors. This has led to an increase in imports. For foreign investors in Dutch funds, exports have been increased. Higher property income received from the investment funds is accordingly attributed to all investors. This grossing up of the cost of investment funds has no impact on GDP but does impact GNI to the extent that households

or the government are directly or indirectly the end-investors (through investment funds, insurers or pension funds).

8.5.5 Rent on land and sub-soil assets

Cross-border flows of rent on land receivable by the landowner, including owners of inland waters and rivers (ESA 2010 par. 4.72), and cross-border flows of royalties receivable by the units for granting the right to exploit sub-soil assets (ESA 2010 par. 4.74) are not applicable in the case of the RoW. Cross-border flows of rent on land and subsoil assets may exist but are to our knowledge not widespread. We assume that related incoming and outgoing rent flows cancel out.

This follows from the general accounting rule that resident/non-resident transactions in land and sub-soil assets is deemed to occur between resident units, in which case the non-resident acquires a financial claim on a notional resident unit (ESA 2010 par. 3.182).

Domestic waters and rivers are not private property in the Netherlands.

CHAPTER 9 MAIN CLASSIFICATIONS USED

9.1 Classifications used for the production approach

In the production approach, the Supply and Use Table (SUT) is the central tool to combine and balance the statistical information on branches of industry and goods and services. For the distinction of branches the classification of the columns of the SUT plays an important role. The relationship between the classification of the Dutch SUT and NACE, rev. 2 is shown in this Excel-sheet. Also the classification of the goods and services (the rows) are shown.

RowsColumsSUT.xlsx

9.2 Classifications used for the income approach

See attached file for overview of sectors and transactions.

Classification Sector Accounts

9.3 Classifications used for the expenditure approach

Table 9.1 COICOP Classification for household final consumption expenditure

COICOP code		Description
CP01		Food and non-alcoholic beverages
CP011		Food
CP012		Non-alcoholic beverages
CP02		Alcoholic beverages, tobacco and narcotics
CP021		Alcoholic beverages
CP022		Tobacco
CP023		Narcotics
CP03		Clothing and footwear
CP031		Clothing
CP032		Footwear incl. repair

COICOP code		Description
CP04		Housing, water, electricity, gas and other fuels
CP041		Actual rentals for housing
CP042		Imputed rentals for housing
CP043		Maintenance and repair of the dwelling
CP044		Water supply and miscellaneous services relating to the dwelling
CP045		Electricity, gas and other fuels
CP05		Furnishings, household equipment and routine maintenance of the house
CP051		Furniture and furnishings, carpets and other floor coverings
CP052		Household textiles
CP053		Household appliances
CP054		Glassware, tableware and household utensils
CP055		Tools and equipment for house and garden
CP056		Goods and services for routine household maintenance
CP06		Health
CP061		Medical products, appliances and equipment
CP062		Out-patient services
CP063		Hospital services
CP07		Transport
CP071		Purchase of vehicles
CP072		Operation of personal transport equipment
CP073		Transport services
CP08		Communication
CP081		Postal services
CP082		Telephone and telefax equipment
CP083		Telephone and telefax services
CP09		Recreation and culture
CP091		Audio'-visual, photographic and information processing equipment
CP092		Other major durables for recreation and culture
CP093		Other recreational items and equipment, gardens and pets
CP094		Recreational and cultural services
CP095		Newspapers, books and stationery
CP096		Package holidays
CP10		Education
CP101		Pre'-primary and primary education
CP102		Secondary education
CP103		Post'-secondary non'-tertiary education
CP104		Tertiary education
CP105		Education not definable by leve
CP11		Restaurants and hotels
CP111		Catering services
CP112		Accommodation services
CP12		Miscellaneous goods and services
CP121		Personal care
CP122_127		Prostitution; other services n.e.c.
CP122		Prostitution
CP123		Personal effects n.e.c.
CP124		Social protection
CP125		Insurance
CP126		Financial services n.e.c.
CP127		Other services n.e.c.

The relationship between the household Budget Survey (HBS) and the Supply and Use Table (SUT) is given in the following Excel-sheet.

Schakeling HBS-GGNR.xlsx

The link between classifications of goods and services in the trade statistics and the SUT is given below in these Excel-sheets

Schakelschema_tbv _annex9.3.xlsx

Link ITS_SUT.xlsx

Table 9.2 GFCF breakdown into type of asset used

GFCF breakdown	
AN. 111	Dwellings
AN.111b	Transfer costs of dwellings
AN.1121	Buildings other than dwellings
AN.1121b	Transfer costs of buildings
AN.1122	Other structures
AN.1122b	Transfer costs of land
AN.1131	Transport equipment
	passenger cars
	airplanes
	ships
	other transport vehicles
	trains and trams
AN.1132	Equipment
AN.11321	Computer hardware
AN.11322	Telecommunications equipment
	telecommunication
	other IT equipment
AN.1139a	Machinery and installations
AN.1139b	Other machinery and equipment
AN.114	Weapon systems
	warplanes
	warships
	transport equipment
	tanks, weapons and munitions
	communications equipment
AN.115	Cultivated biological resources
AN.1151	Animal resources yielding repeat products
AN.1152	Tree, crop and plant resources yielding repeat products
AN.1171	Research and development
AN.1172	Mineral exploration and evaluation
AN.1173	Computer software and databases
	purchases of software packages
	payment of royalties and licenses on software
	payment for services related to the development own-account custom made software
AN. 1174	Entertainment, literary and artistic originals

Own-account GFCF is distinguished in the following asset types	
AN.1121	Buildings other than dwellings
AN.1122	Other structures
AN.1131	Transport equipment (other transport vehicles, trains and trams)
AN.1139a	Machinery and installations
AN.1152	Tree, crop and plant resources yielding repeat products
AN.1171	Research and development
AN.1173	Computer software and databases
AN. 1174	Entertainment, literary and artistic originals

9.4 Classifications used in the transition from GDP to GNI

In the transition from GDP to GNI no other classifications are used than already mentioned in the paragraphs 9.1 – 9.3.

CHAPTER 10 MAIN DATA SOURCES USED

10.1 Statistical surveys and other data sources used for the production approach

10.1.1 Business Statistics (SBS-statistics)

In the Netherlands the Business Statistics are held in a lot of branches of industry. More than 100 different forms are used. A detailed description of this annual survey is found in chapter 3, section 3.2.2.

An example for the Manufacturing industry:

VL0023 PS Industrie met CPA_426.pdf

Table 10.1 Description Business Statistics survey

Name of survey:	Business Statistics
Link to surveys undertaken at the European level:	
Reporting units:	Enterprise
Periodicity:	Annual
Time of availability of results:	18 months after the end of the survey period
Sampling frame:	Statistical Business Register of Statistics Netherlands
Survey is compulsory or voluntary?	Compulsory
Main features of survey methodology:	• PPS-sampling (stratification on NACE and size class employment). • Census approach for largest enterprises (100 persons employment and more). • Threshold applied (>= 10 persons employed) for part of the NACE activities. See annex 3.1. • Electronic and postal questionnaires depending on the preference of the respondent.
Population size:	Circa 870 thousand enterprises in the domain of production statistics.
Sample size:	74 thousand
Survey response rate:	74 per cent (unweighted)

Method used to impute for missing data:	• Weighting/grossing up for PPs part of the sample. • Several imputation techniques for census part (use of Tmin1 data, STS data, VAT-data, average of stratum).
Variable used for grossing-up to the population:	Both turnover and employment are used in the grossing-up procedure.
Sample coverage, as % in terms of variable used for grossing-up:	Sample covers 67 per cent of the employment in the sampling frame.
Main variables collected:	Operating surplus, turnover, operating costs, purchase value of sales, personnel costs, other costs, Operating returns. Also derived variables like production value and value added
Further adjustments made to the survey data:	--

10.1.2 Finance of enterprises (SFO)

SFO.pdf

Name of survey:	Statistics of finances of enterprises
Link to surveys undertaken at the European level:	-
Reporting units:	Enterprise group
Periodicity:	Annual (Compilation of Statistics of Large Enterprises 'SFGO' and Statistics of Small Enterprises 'SFKO') and quarterly
Time of availability of results:	Annual: 14 months after the end of the survey period, Quarterly: 90 days after the end of the survey period.
Sampling frame:	Statistical Business Register
Survey is compulsory or voluntary?	Compulsory
Main features of survey methodology:	Annual SFGO: use of a size threshold for sampling. Annual SFKO: use of administrative tax data. Quarterly: panel of respondents

Population size:	About 224.000 enterprise groups
Sample size:	Annual SFGO: about 2100' Annual SFKO: about 222.000. Quarterly: about 350
Survey response rate:	Annual SFGO: 80 per cent response. Annual SFKO: 97 per cent response. Quarterly 85 to 90 per cent response
Method used to impute for missing data:	Annual: Last available survey of the enterprise or imputation of average. Quarterly: Last available survey of the enterprise or imputation of average.
Variable used for grossing-up to the population:	Population totals are not determined by grossing up. For the not sampled part of the population, annual statistics are register based, based on tax data. Quarterly statistics are based on model-based estimation; extrapolation of annual statistics.
Sample coverage, as % in terms of variable used for grossing-up:	Annual SFGO: about 80 per cent of total assets, quarterly about 60 per cent of total assets.
Main variables collected:	Full balance sheets and profit and loss account
Further adjustments made to the survey data:	-

10.1.3 ICT-usage and ICT-expenditure, 2015

Table 10.3 Description ICT usage of enterprises 2016 survey

Name of survey:	ICT usage of enterprises 2016.
Link to surveys undertaken at the European level:	This survey is the Dutch version of the Community Survey on ICT Usage and E-commerce in enterprises 2016.
Reporting units:	Business enterprise
Periodicity:	Annual

Time of availability of results:	Approximately 10 months after the end of the reference period.
Sampling frame:	Statistical Business Register.
Survey is compulsory or voluntary?	Voluntary for enterprises.
Main features of survey methodology:	The survey methodology is described in the quality report (see annex).
Population size:	52.941
Sample size:	Gross sample: 12.144 Net sample: 8.878
Survey response rate:	73 per cent
Method used to impute for missing data:	See quality report in annex.
Variable used for grossing-up to the population:	Depending on the variable either the number of employed persons, or the ratio of the population size and the number of respondents in the stratum (N/n).
Sample coverage, as % in terms of variable used for grossing-up:	Not available.
Main variables collected:	See questionnaire, which is attached as an annex.
Further adjustments made to the survey data:	See editing methods described in the quality report (annex).

Table 10.4 Description ICT usage of enterprises 2010 survey

Name of survey:	ICT expenditure 2010.
Link to surveys undertaken at the European level:	This survey is the Dutch version of the Community Survey on ICT Investment and expenditure in Enterprises for 2010.
Reporting units:	Business enterprise.
Periodicity:	Annual. (The survey was ended in 2011.)
Time of availability of results:	Approximately 18 months after the end of the reference period.
Sampling frame:	Statistical Business Register.
Survey is compulsory or voluntary?	Voluntary for enterprises.
Main features of survey methodology:	In principle the same sample was used as in the survey 'ICT usage in enterprises 2010'. This sample was drawn at random from the frame population, with full coverage of enterprises employing 250 or more persons. The size threshold was 10 or more employed persons. Approximately 90 per cent of respondents used a

	web questionnaire, the remaining part used paper questionnaires.
Population size:	49.354
Sample size:	Gross sample: 9.684 Net sample: 6.606
Survey response rate:	Survey response rate: 68 per cent
Method used to impute for missing data:	No specific imputing method was applied.
Variable used for grossing-up to the population:	Turnover.
Sample coverage, as % in terms of variable used for grossing-up:	Not available.
Main variables collected:	See questionnaire, which is attached as an annex.
Further adjustments made to the survey data:	No specific adjustments were made other than ad hoc logical data editing rules.

For the ICT-usage questionnaire a Quality Report is available as an annex:

qualityreport2016.pdf

10.1.4 R&D survey

R&D Innovatie.pdf

Table 10.5 Description R&D survey

Name of survey:	R&D survey
Link to surveys undertaken at the European level:	Science and Technology Indicators
Reporting units:	Enterprise
Periodicity:	Annual
Time of availability of results:	Preliminary results 10 months after the end of the survey period, final results 18 months after the end of the survey period
Sampling frame:	Statistical Business Register of Statistics Netherlands
Survey is compulsory or voluntary?	Compulsory
Main features of survey methodology:	For enterprises with 10 or more persons employed sampling is used. Stratification is based on NACE

	and size of the enterprise. For enterprises with less than 10 persons employed we make an estimate based on R&D tax incentive data provided by the Dutch government.
Population size:	For sampling 60.802 enterprises with 10 or more persons employed. Number of enterprises with less than 10 persons employed about 1,5 million.
Sample size:	6.780
Survey response rate:	89,6 percent
Method used to impute for missing data:	First step t-1 data of the same enterprise, subsequently imputation based on average for NACE/Size combination
Variable used for grossing-up to the population:	Number of enterprises
Sample coverage, as % in terms of variable used for grossing-up:	6.780 / 60.802 = 11,2 percent
Main variables collected:	R&D personnel (HC and FTE), R&D expenditure
Further adjustments made to the survey data:	None

10.1.5 Netherlands' Housing Survey (WoON)

Table 10.6 Description Netherlands housing survey

Name of survey:	Netherlands' Housing Survey (WoON)
Link to surveys undertaken at the European level (e.g. Structural Business Statistics):	-
Reporting units (e.g. enterprise/ local KAU/ household):	Persons aged 18 years or older living in private households
Periodicity (e.g. annual/quarterly/other- to be specified):	Three-yearly
Time of availability of results (e.g. 18 months after the end of the survey period):	12 months after the end of the survey period.
Sampling frame: (e.g. name of business register used/ population census):	The sample is taken from all non-institutionalised Dutch residents who are 18 years or older and registered with their local municipality. From this group a stratified sample is taken according to the design of the survey, with nationwide coverage of municipalities.
Survey is compulsory or voluntary?	Voluntary
Main features of survey methodology (e.g. PPS sampling/ panel of respondents/ use of a size	The housing Survey is conducted according to a 'mixed mode' design. Sample units (persons) are asked to participate via the

threshold for sampling/ postal questionnaire/ telephone interview):	internet (CAWI – Computer Assisted Web Interviewing). Non-respondents are re-approached using Computer Assisted Telephone Interviewing (CATI) if their telephone number is known, and otherwise by way of Computer Assisted Personal Interviewing (CAPI).
Population size:	The population of WoON consist of approximately 12 million persons.
Sample size:	A minimum of 60,000 respondents have to be complete the questionnaire, as the survey should also provide reliable information on small geographical subareas.
Survey response rate:	Approximately 59%
Method used to impute for missing data:	Missing values are imputated with a 'hot-deck' method.
Variable used for grossing-up to the population (e.g. turnover/ employment):	A correction is applied to control differences between the sample and the population. For this purpose a weighting factor is used based on sex, age, ethnic background, region (municipality, COROP, province and some on request- oversampled municipalities), household income, Value Immovable Property and survey period.
Sample coverage, as % in terms of variable used for grossing-up (e.g. sample covers 60% of employment recorded on the sampling frame):	-
Main variables collected:	Housing costs, Living conditions, Prediction of relocation and moving house intention
Further adjustments made to the survey data:	None

10.1.6 Rent increase for dwellings

Table 10.7 Description Rent increase for dwellings survey

Name of survey:	Rent increase for dwellings.
Link to surveys undertaken at the European level (e.g. Structural Business Statistics):	-
Reporting units (e.g. enterprise/ local KAU/ household):	Housing corporations, businesses, municipal housing institutions, corporations, private landlord and corporate investors.

Periodicity (e.g. annual/quarterly/other- to be specified):	Annual.
Time of availability of results (e.g. 18 months after the end of the survey period):	Approximately 1 month after the end of the reference period (July).
Sampling frame: (e.g. name of business register used/ population census):	BAG register (Basis Administratie Gebouwen/ Basic Administration of Buildings).
Survey is compulsory or voluntary?	Compulsory for all, only voluntary for private landlords.
Main features of survey methodology (e.g. PPS sampling/ panel of respondents/ use of a size threshold for sampling/ postal questionnaire/ telephone interview):	The survey methodology is described in the methodology report (see annex).
Population size:	3.321.397 dwellings (July 2016)
Sample size:	Integral: 390.262 (July 2016) Sample: 16.189 (July 2016)
Survey response rate:	97% (July 2016)
Method used to impute for missing data:	No specific imputing method was applied.
Variable used for grossing-up to the population (e.g. turnover/ employment):	Number of dwellings
Sample coverage, as % in terms of variable used for grossing-up (e.g. sample covers 60% of employment recorded on the sampling frame):	The sample part covers 0,6% of total dwellings (July 2016). =16.189/(3.321.397-390.262)
Main variables collected:	Rents and other costs, specifications of the dwelling
Further adjustments made to the survey data:	None

Methodology

Rent increase for dwellings

10.1.7 Home ownership (bewoonde en niet-bewoonde woningen en woningvoorraad)

Table 10.8 Description Home ownership survey

Name of survey:	Home ownership (Eigendom)
Link to surveys undertaken at the European level (e.g. Structural Business Statistics):	-

Reporting units (e.g. enterprise/ local KAU/ household):	dwelling
Periodicity (e.g. annual/quarterly/other- to be specified):	annual
Time of availability of results (e.g. 18 months after the end of the survey period):	6-9 months
Sampling frame: (e.g. name of business register used/ population census):	Basisregistratie Adressen en Gebouwen (BAG)
Survey is compulsory or voluntary?	-
Main features of survey methodology (e.g. PPS sampling/ panel of respondents/ use of a size threshold for sampling/ postal questionnaire/ telephone interview):	-
Population size:	approximately 7 million dwellings.
Sample size:	-
Survey response rate:	-
Method used to impute for missing data:	-
Variable used for grossing-up to the population (e.g. turnover/ employment):	-
Sample coverage, as % in terms of variable used for grossing-up (e.g. sample covers 60% of employment recorded on the sampling frame):	-
Main variables collected:	Ownership (rented or owner-occupied property); Type of owner (if ownership is rented:social or not); (un)occupied.
Further adjustments made to the survey data:	-

10.1.8 Register adresses and buildings

Table 10.9 Description Register adresses and buildings survey

Name of survey:	Register adresses and buildings
Link to surveys undertaken at the European level:	INSPIRE

Reporting units:	Smallest area for working or living, located within a building. Provides also areas assigned for berth or stand. All objects provide one or more addresses.
Periodicity:	Continuously
Time of availability of results:	Changes will be updated by the community in the register within five days after they took place. The register is used and delivered each month to Statistics Netherlands.
Sampling frame:	No sampling, total population
Survey is compulsory or voluntary?	Compulsory for communities to update the register. Compulsory for Statistics Netherlands to use the register.
Main features of survey methodology:	-
Population size:	Approximately 10 million objects/addresses and 12 million buildings.
Sample size:	Not applicable, is a register.
Survey response rate:	Not applicable, is a register.
Method used to impute for missing data:	Not applicable, is a register.
Variable used for grossing-up to the population:	Total population is provided
Sample coverage, as % in terms of variable used for grossing-up:	Total population, is a register
Main variables collected:	The database contains information from the moment of concession until the moment a building cease to exists. Main variables: Location of object, berth, stand and building, address, main purpose for use (i.e. residential or other use), status of object (i.e. building permit granted, in use, demolition), useful living area, construction year.
Further adjustments made to the survey data:	Derivation whether it's a new object or a changed object. Correction for anomalies in the objects history of existence or main purpose of use.

10.2 Statistical surveys and other data sources used for the income approach

10.2.1 Administrative records employment and social insurance

Table 10.10 Description Employees' Register of the Employee Insurance Agency (Polisadministratie)Name of survey:	Employees' Register of the Employee Insurance Agency (Polisadministratie)
Link to surveys undertaken at the European level:	Not applicable
Reporting units:	Enterprises reporting jobs to the national tax authority (Belastingdienst) and Employee Insurance Agency (UWV)
Periodicity:	Time frames of the listings are four weeks, monthly, half year or year. Statistics Netherlands report monthly.
Time of availability of results:	On t+45 (days) preliminary results are published as a quarter (flash). On t+75 (days) monthly data can be requested. On t+90 (days) the results are published as a quarter (regular) based on a better response. On t+105 (days) monthly data is published on StatLine.
Sampling frame:	Not applicable, the Employees' Register of the Employee Insurance Agency (Polisadministratie) is an administrative source.
Survey is compulsory or voluntary?	Tax filing is compulsory within due date
Main features of survey methodology:	Use of an administration, information of all jobs and other income transfers in the Netherlands
Population size:	Not applicable, not a sample
Sample size:	Not applicable, not a sample
Survey response rate:	Not applicable, not a sample
Method used to impute for missing data:	Nearest Neighbourhood Method
Variable used for grossing-up to the population:	Not applicable, not a sample
Sample coverage, as % in terms of variable used for grossing-up:	Full coverage, no sample
Main variables collected:	Job status, wage, hours worked
Further adjustments made to the survey data:	Inconsistencies will be imputed or removed

10.2.2 Direct Reporting Scheme (Directe rapportages, DRA)

The Central Bank (DNB) distinguishes the following reporting profiles for the Dutch balance of payments:

- BFI Benchmark (BEB)
- Special financial institution (BFI)
- Special Financial Institutions, SPVs (BFS)
- Investment funds, limited (BIB)
- Investment funds, complete (BIC)
- Investment funds, minimal (BIM)
- Investment funds, full (BIV)
- Custodians (BWB)
- Clearing Members (CLM)
- Central securities depository (CSD)
- The Central Bank (DNB)
- Other monetary financial institutions (MFI)
- Other monetary financial institutions - international trade in services (MFI trade)
- Non-financial corporations (NFV)
- Other financial institutions (OFI)
- Governmental institutions (OVH)
- Pension funds, quarterly reporters (PNK)
- Pension funds, monthly reporters (PNM)
- Syndicated loans abroad (SLB)
- Syndicated loans Netherlands (SLN)
- Insurance corporations, quarterly reporters (VRK)
- Insurance corporations, monthly reporters (VRM)
- Health insurance companies (ZVK)

Two examples of questionnaires are the following.

Monthly_reporting_f
orms_profile_BFI_(ve

Monthly_reporting_f
orms_profiles_NFV_a

Table 10.11 Description Direct reporting scheme of the Central Bank survey

Name of survey:	Direct Reporting Scheme of the Central Bank
Link to surveys undertaken at the European level:	Balance of payments, sector accounts
Reporting units:	Enterprise or legal entity
Periodicity:	Depends on profile: monthly, quarterly or annual
Time of availability of results:	Monthly reports must be received by DNB by the 15th working day after the reporting month at the latest. Quarterly reports must be received by DNB by the 30th working day after the reporting quarter at the latest. Exception are the quarterly

	reports by institutions with profiles BIC, BIV and BIB. Their reports must be received by DNB by the 15th working day after the reporting quarter at the latest. Yearly reports must be received within 4 months after the end of the reporting fiscal year. Exception are the yearly reports by institutions with profiles BIB and BIM. Their reports must be received by DNB within 30 working days after the end of the calendar year.
Sampling frame:	Depends on profile; mostly supervision register of DNB. DNB maintains and updates the population of reporting entities, partly through intensive monitoring of media reports.
Survey is compulsory or voluntary?	Compulsory
Main features of survey methodology:	DNB has an online application. The application itself may be launched only by reporters that have received an authorisation from DNB.
Population size:	Depends on profile.
Sample size:	Depends on profile.
Survey response rate:	Depends on profile.
Method used to impute for missing data:	Different methods; for instance using averages of reported data of the last 12 months or using data of t-1
Variable used for grossing-up to the population:	Different methods, for instance additive methods, or grossing up with help of reference data
Sample coverage, as % in terms of variable used for grossing-up:	Depends on profile.
Main variables collected:	Balance sheet information, property income variables
Further adjustments made to the survey data:	none

10.3 Statistical surveys and other data sources used for the expenditure approach

10.3.1 International trade in services

Vragenlijst IHD.pdf

Table 10.12 Description Statistics of the international trade in services survey

Name of survey:	Statistics of the international trade in services

Link to surveys undertaken at the European level:	
Reporting units:	Enterprises and individuals registered in the Netherlands active in imports or exports of services. Data for international services, except travel, are based on survey of enterprises. Data for travel are based on individual information from household surveys and the survey on overnight stays in Dutch accommodation.
Periodicity:	Quarterly. Annual data become available at the same time as the fourth quarter figures.
Time of availability of results:	Provisional quarterly figures become available one quarter after the reporting period. With the publication of new quarterly figures, figures for the preceding quarter are also adjusted based on afterwards received source information (more detailed provisional figures). Definite quarterly figures become available in the autumn of the following year. The annual figures become available on StatLine at the same time.
Sampling frame:	Data for international trade in services are compiled from a combination of information sources: - Each quarter, Statistics Netherlands requests enterprises to supply data on imports and exports of services. The large enterprises (i.e. those with high values of imports or exports of services) in the international trade in services are all observed, while for the smaller enterprises (i.e. those with lower values of imports or exports of services), the results are based on a sample. - Statistics Netherlands receives quarterly figures from the DNB on international trade of services by monetary financial institutions and special financial Institutions. - For information on travel services, the import value of travel (= expenditure of Dutch residents abroad) is based on the results of the Continuous Holiday Survey conducted by NBTC-NIPO Research. The estimation of export value of travel (= spending by foreigners in the Netherlands) is based on sample data from survey of overnight stays in Dutch accommodation and the price index figures for consumption by foreigners in the Netherlands. - Data from the international goods trade statistics are used to adjust figures for transport and insurance services.
Survey is compulsory or voluntary?	Compulsory
Main features of survey methodology:	Data from enterprises are collected mostly through electronic questionnaires.
Population size:	The population for the international trade in services consists of two parts: a census for the large enterprise groups and a sample for small and medium sized enterprises (SME). The population of large enterprises is based on the SBR in combination with information from

	the department responsible for consistent observation of large and complex enterprises and SBS. The register of SME-units is based on SBR and SBS and information from the tax authorities (VAT EU Recapitulative Statement).
Sample size:	Companies which Statistics Netherlands approaches for international trade in services are divided into two groups. The first group of companies consists of approximately 400 companies with high values of imports or exports of services. They receive a detailed questionnaire in which the input and output is broken down into more than 70 services and 250 countries. The second group of companies(i.e. those with lower values of imports or exports of services), sampled in about 5 thousand units. This group receives a less detailed questionnaire with a breakdown into approximately 55 services.
Survey response rate:	--
Method used to impute for missing data:	In the case of non-response, values are imputed on the basis of figures from earlier quarters. If these figures are missing the extra weight method is applied.
Variable used for grossing-up to the population:	The stratification of the sample enterprises is based on economic activity, employee size class and the expected chance that the enterprise imports or exports services. Using these characteristics, data are subsequently weighted by the frame from which the sample is drawn. Imports of travel are based on characteristics of travelers abroad (sex, age, region, urbanization and education) weighted by the total Dutch population. For exports of travel, samples from Dutch accommodation providers are weighted using a regression estimator for the total population of accommodation providers. Data from other sources are included in the results without weights
Sample coverage, as % in terms of variable used for grossing-up:	--
Main variables collected:	--
Further adjustments made to the survey data:	--

10.3.2 International trade in goods

Table 10.13 Description Statistics of the international trade in goods survey

Name of survey:	International trade in goods
Link to surveys undertaken at the European level:	--
Reporting units:	All enterprises in the Netherlands active in imports and / or exports of goods
Periodicity:	Monthly

Time of availability of results:	For final results 7 months after the reporting month
Sampling frame:	Data on trade with non-European Union countries come mainly from the customs authorities. Intra EU imports and intra EU exports are reported to Statistics Netherlands.
Survey is compulsory or voluntary?	Compulsory
Main features of survey methodology:	Enterprises whose intra EU imports or intra EU exports exceeds 1,500,000 euros per year are obliged to submit data to Statistics Netherlands.
Population size:	intra-EU imports: 360.208 units intra-EU exports: 155.454 units
Sample size:	intra-EU imports: 9.255 units intra-EU exports: 9.982 units
Survey response rate:	intra-EU imports: 74% intra-EU exports: 72%
Method used to impute for missing data:	For non-respondents missing values are imputed based on historical data. Furthermore data are grossed up for enterprises below the threshold of € 1.500.000.
Variable used for grossing-up to the population:	Estimates of the remaining units importing and/or exporting goods are based on individual Value Added Tax and Intra-Community Transactions (ICP) declarations provided to Statistics Netherlands by tax authorities on a monthly basis.
Sample coverage, as % in terms of variable used for grossing-up:	For 2015, grossing up + imputation for non-response were 10% of the value of total imports and 7% of total exports.
Main variables collected:	
Further adjustments made to the survey data:	The National Accounts department makes three types of further adjustments (which are explained in the inventory): Data validation, Conceptual adjustments, Exhaustiveness.

10.3.3 The household budget survey

Table 10.14 Description Budget survey

Name of survey:	Budget Survey
Link to surveys undertaken at the European level:	--
Reporting units:	Households

Periodicity:	5 Yearly
Time of availability of results:	Provisional figures 12 – 18 months after the end of the survey period; final estimates one year later.
Sampling frame:	All private households; occupants of institutional homes are not surveyed.
Survey is compulsory or voluntary?	Voluntary
Main features of survey methodology:	Households are selected randomly; written and electronic questionnaires are used and – if the telephone number is known – also by telephone. Participants receive an code to fill in the several questionnaires and the household expenses.
Population size:	All households in the Netherlands (7,7 million).
Sample size:	Sample size: 15.000
Survey response rate:	
Method used to impute for missing data:	Imputations and corrections based on additional information.
Variable used for grossing-up to the population:	Grossing up procedure has two steps. (1) Household gets an initial weight, based on the chance to fall into the sample and (2) the definite weight is calculated taking into account the possible bias as a consequence of non-respons.
Sample coverage, as % in terms of variable used for grossing-up:	
Main variables collected:	Characteristics of the households and their expenditure
Further adjustments made to the survey data:	

10.3.4 Gross Fixed Capital Formation (GFCF)

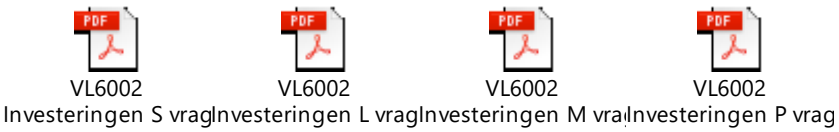


Table 10.15 Description Investment survey

Name of survey:	Investment survey
Link to surveys undertaken at the European level:	none
Reporting units:	Enterprise
Periodicity:	Annual
Time of availability of results:	16 months after the end of the survey period

Sampling frame:	General Business Register ABR
Survey is compulsory or voluntary?	Compulsory
Main features of survey methodology:	PPS Sampling
Population size:	± 1.300.000
Sample size:	± 48.000
Survey response rate:	± 87%
Method used to impute for missing data:	Weighing
Variable used for grossing-up to the population:	Employment
Sample coverage, as % in terms of variable used for grossing-up:	Sample covers 34% of employment recorded on the sampling frame
Main variables collected:	Non-residential buildings, other structures, transport equipment, computers, machinery and installations, other tangible fixed assets
Further adjustments made to the survey data:	none

10.4 Statistical surveys and other data sources used for the transition from GDP to GNI.

No specific surveys, other than explained in the other sections of this chapter, are carried out for the transition from GDP to GNI.

LIST OF ANNEXES

Chapter 1

1.1 Max Booleman, Frans Hoeve, Paul van de Laan and Peter van Nederpelt (2014), "Quality Management at Statistics Netherlands, 2014".

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4.2 Van Rooijen-Horsten, Dirk van den Bergen, Ron de Heij en Mark de Haan (2008), "Service lives and discard patterns of capital goods in the manufacturing industry, based on direct capital stock observations, the Netherlands".

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5.1 Kees van der Ende and Piet Verbiest (2011), "The Dutch approach to cross border transactions in the national accounts", Statistics Netherlands.

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5.2 Leo Hiemstra (2014), "Processing, production abroad and merchanting in the national accounts", Statistics Netherlands.

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5.3 Stephen Chong (2015), "Economic ownership as leading principle in ESA 2010: consequences for national accounts", Statistics Netherlands.

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Chapter 7

7.1 Edens, B. Bruil, A., Statistics Netherlands (2014), "Inclusion of non-observed economy in Dutch national accounts after the 2010 revision according to the European System of National and Regional Accounts". Paper prepared for the ECE Conference of European Statisticians Group of Experts on National Accounts Thirteenth session, Geneva, 6 -9 May 2014.

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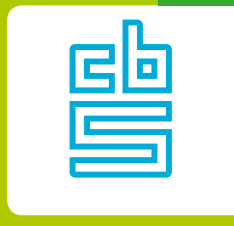

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