Regional GVA Inventory

23 December 2008

Statistics Netherlands
National Accounts Department

Theme 41: National and Regional Accounts
Grant Agreement No 41100.2005.006-2007.255

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Chapter 1   SUMMARY: OVERVIEW OF ORGANISATION, METHODOLOGY AND SOURCES

1.1   Organisation of the statistical process for compiling regional GVA

The Regional accounts group is part of one of the five task groups of the National accounts department. At the moment, the regional accounts team consists of 7 fulltime employees. The total staff at the National accounts department numbers around 100 employees. Most other national accounts task groups are on the same floor, which makes it easy to communicate if there are questions or practical problems. For example, one of the task groups is responsible for the coordination of the micro-data used for both the national accounts and the regional accounts.

Statistics Netherlands' statistical programmes (the multi-year statistical programme and the annual work programme) are set by the Central Commission for Statistics (CCS). This is an independent commission that watches over the independence, impartiality, relevance, quality and continuity of the statistical programme. In addition, the Director-General of Statistics Netherlands is supported by a number of high-level advisory boards, consisting of representatives of important users (Ministries, universities, employers' organisations, etc.) The Director-General decides autonomously which methods to use to make these statistics, and whether or not to publish.

Figure 1.1 – Organisation chart
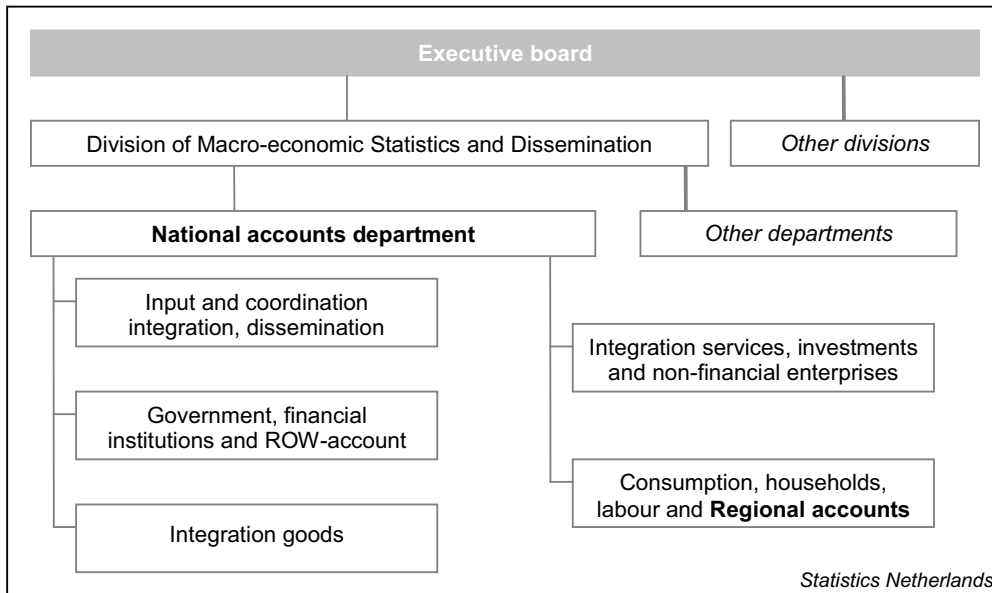
Figures on regional accounts are published twice a year, in July and September. In July of year t, the regional GVA growth rates of t-1, t-2 (provisional data) and t-3 (definite data) are published. The full set of figures (including level estimates) is published online in September. The figures of t-3 are the revision of earlier published provisional data for the same year.

1.2 Overview of the methodology of regional GVA compilation

For the compilation of regional gross value added, the production method is primarily used. For the government sector, the income method is used. Regional GVA is compiled bottom-up as much as possible. For reference year 2001, around 30 percent of GVA was regionalised bottom-up. A large part (around 57 percent) is distributed top-down using a closely related indicator. In many cases, the number of jobs per region is used as an indicator. The remainder is regionalised based on extrapolations of the regional distributions of previous years.

Figure 1.2 – Importance of methods

		% of GVA	Mainly in groups
Bottom-up	(SBS, large KAUs)	30	D, F, G, H, I, K
Top-down	(SBS, small KAUs) closely related indicator	20	
	Closely related indicator	37	A/B, C, J, K, L, M, N, O/P
	Extrapolation/ models	7	E, K, L, N
Adjustments to National accounts		6	
		100	

Compilation is done on a subdivision of NUTS3 level, for a number of 53 regions, including the Extra-regio. Figures are published at this level also. If necessary for transmission of statistics, the figures are aggregated to, for instance, NUTS2 level.

For the years 1995-2001 time series were compiled based on the series from 2001 onwards. In this way, revision breaks are eliminated and consistent time series are compiled from 1995 until the most recent reference year.
In the period 1996-1998, regional supply-and-use tables were compiled. This was done only once, for the year 1992, both as an innovation project and as a test of the quality of the regional figures.

1.3 Main sources used for the compilation of regional GVA

For a large part, the regionalisation of GVA is done using survey or census data. These sources accounted for around 86 percent in 2001. The structural business statistics account for 50 percent, the remaining 36 percent is other data like those from the agricultural census. In these cases, a top-down distribution with the aid of a closely related indicator (generally employment data) is made. Finally, more and more data is obtained from standardised registers, like tax registers or housing registers. In 2001, around 8 percent of regional GVA was obtained from administrative data. For each industry, the regionalised data are grossed up to equal the national totals provided by the supply-and-use tables.

Chapter 2 RELEASE AND PUBLICATION TIMETABLE, REVISION POLICY, ACCESS FOR THE PUBLIC

2.1 Timetable for release and publication of provisional and final estimates

The regional accounts release cycle has two publication dates each year. A preliminary release of the regional GDP growth figures is scheduled for July, following the publication of the national accounts growth rates of the three preceding reporting years. The full set of figures is published in September on StatLine, the data access part of the Statistics Netherlands website. These figures are at a subdivision of NUTS 3 level, with a detail of 13 industries for the provisional data t-2 and 37 industries for the definite data t-3. For the provisional year t-1 only GDP volume changes are published, no further details. In addition, figures are published in a pdf-document which is released in November.

Table 2.1 – Release calendar (publication in year t)

	reference year	Jan	Feb	Mar	Apr	May	Jun	**Jul**	Aug	**Sep**	Oct	Nov	Dec
Provisional data (1)	t-1	1	2	3	4	5	6	**7**	8	**9**	10	11	12
Provisional data (2)	t-2	13	14	15	16	17	18	**19**	20	**21**	22	23	24
Definite data	t-3	25	26	27	28	29	30	**31**	32	**33**	34	35	36

The table shows the date of publication in months after the end of the reference year.

The release calendar is official. The date of publication is announced in a publication schedule on the website (http://www.cbs.nl/en-GB/menu/publicaties/agenda) minimal 6 months in advance.

Estimates
The provisional status of the estimates of the reference years t-1 and t-2 is explicitly stated. When revisions of these estimates are published for the first time, this is also mentioned. This information is written down in the 'technical notes'.

2.2 Policy on benchmark revisions

The regional accounts are closely connected to the national accounts. The same classifications, concepts and definitions are used. Both follow the same policy, placing emphasis on correct growth changes rather than a correct level of the figures. Moreover, the national totals per industry are the basis for the regional distribution of GVA and other indicators. Hence, revisions at the national level are always followed at the regional level. The most recent benchmark revision of the national and regional accounts took place for reporting year 2001 (carried out in calendar year 2005).

Apart from revisions of the national accounts, a benchmark revision of the regional accounts is the right moment to update the regional distribution, allowing for the availability of new sources, errors encountered in the past and changes in international regulations.

2.3 Comparability over time

Statistics Netherlands has published regional economic indicators since reporting year 1960. After the reporting years 1965 and 1970, starting in 1973 the figures are published annually.

The most recent benchmark revisions took place on the definite year figures for 1995 and 2001. For the years 1995-2001 time series have been compiled based on the series from 2001 onwards. This eliminates the breaks in series resulting from three main changes (apart from some classification adjustments and other corrections of errors) in both the national and the regional accounts compilation process. From 2001 on, the national accounts include the so-called Special Purpose Entities[1]. Secondly, after the revision estimates of FISIM (financial intermediate services indirectly measured) are allocated to sectors and the branches of industry instead of to the total economy. These two changes caused a substantial series break in the national accounts. For the regional accounts, among other things the availability of new sources on power plants led to a new regional distribution.

Method for compiling time series
The benchmark revision in reporting year 2001 caused a break between the series 1995-2001 and 2001-now. The year 2001 can be used to join the two series because for that year two sets of data are available: one including and one excluding the changes of the benchmark revision. For about 100 branches of industry in 53 regions, the proportional differences between these datasets were used to adjust the data of 1995-2000. In a number of cases, this method produced poor results and other methods were applied. Lastly, for each branch the regional figures were raised or lowered proportionally to equal the sum of the national total of that branch.

2.4 Transmission to international institutions other than Eurostat

There are no direct transmissions to international institutes other than Eurostat.

2.5 Accessibility for the public

Apart from the regional growth rates (GVA and GDP) in the successive years, data are available on production, intermediate consumption, gross value added, wages and salaries, taxes and subsidies, operating surplus and labour input. Only the definite year figures and the provisional year figures (national accounts, second estimate) are available. The latter is an extrapolation of the regional distribution of the definite year figure based on changes in the number of jobs. It is published at the level of 13 industries (based on NACE17) while the definite year figure contains data at the level of 37 industries. Both are available by a regional subdivision of the NUTS3 level that divides the Netherlands into 52 regions, apart from the Extra-regio.
The yearly publication is printed in a limited circulation and also available as pdf document on the website (in Dutch only):
> http://www.cbs.nl/nl-NL/menu/themas/macro-economie/publicaties/publicaties/archief/2007/2007-reg-econ-jaarcijfers-pub.htm
Data from 1995 on are available (in Dutch and English) on StatLine, the public database on the Statistics Netherlands website).
> http://statline.cbs.nl, ENGLISH, THEME → MACRO-ECONOMICS → *CHOOSE A TABLE*.
The regional GVA is available in the tables 'Regional accounts; economic growth', 'Regional accounts; key figures' and 'Regional accounts; production structure'. Data for earlier years are also available under THEME → MACRO-ECONOMICS → ARCHIVE.

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[1] A Special Purpose Entity (SPE, in Dutch BFI) is part of a foreign group of enterprises located in the Netherlands gathering financial resources from the rest of the world and grant the money abroad on their own account (GNI Inventory 2001 the Netherlands, par. 3.16.1).

2.6 Policy for metadata

No official international standard is used to describe the metadata. However, ongoing efforts are made to provide clear information on metadata. Each publication (printed and on StatLine) is accompanied by an explanation of the definitions and concepts used. These explanations are usually published in a standard format, including a link to a methodological description.
After the introduction of StatLine, more attention was paid to the harmonisation of variables, concepts and definitions in use at different departments within Statistics Netherlands. This project is still in process.
For the regional accounts, the concepts and definitions in use are identical to those in the national accounts.

Chapter 3 METHODOLOGY FOR THE CALCULATION OF REGIONAL GVA

This chapter provides an overview of the methodological principles of the calculation of regional GVA, describing the various sources and methods used. The sources and methods applicable to all industries are described in section 3.1. This part starts with a general overview of the process of compiling regional accounts in the Netherlands. Section 3.2 examines sources and methods in use for specific industries.

3.1 Principles applicable to all industries

General overview

The most important regional division in use for compiling the regional accounts is the so-called COROP-plus division. This is a subdivision of NUTS3, consisting of 52 regions. Together with the Extra-regio (in the table referred to by '+'), regional GVA is calculated for 53 regions in the Netherlands.

Figure 3.1 – Regions in the Netherlands

Level	Name	# regions
NUTS1	Groups of provinces	4+
NUTS2	Provinces	12+
NUTS3	COROP-regions	40+
	COROP-plus-regions	52+
LAU2	Municipalities (year 2008)	443+

Statistics Netherlands compiles regional accounts for the following variables: output, intermediate consumption, gross value added, compensation of employees, other taxes on production, other subsidies on production, operating surplus and labour input (total and employees). GVA and operating surplus are calculated as balancing items. The operating surplus is not a required variable, but is calculated to check the composition of the GVA.

Figure 3.2 – Regional distributed variables

Variable	code
Output	P.1
– Intermediate Consumption	P.2
= **Gross Value Added**	B.1g
– Compensation of employees	D.1
– Other taxes on production	D.29
+ Other subsidies on production	D.39
= **Operating surplus/Mixed income**	B.2/B.3

A detailed classification of 118 industries is used for the compilation process. Sometimes, a more detailed classification (around 250 industries), used for the national accounts, is used.
As mentioned in chapter 2, the yearly compilation cycle consists of three subsequent years. This chapter elaborates on the method for compiling the definite year figures. By comparison, the method for compiling the provisional figures is quite uncomplicated and uniform for the various industries. For most industries, the composition of the definite year figure is extrapolated in proportion to the change in the number of employees. For some industries, for example the labour extensive processing industry, other figures are used as an indicator.

For agriculture and housing, among other things, definite data are available at an early stage. For these industries, provisional figures and definite figures are calculated in the same way.

Sources

The main sources for compiling the regional accounts are the *structural business statistics* (SBS) and the statistics on *employment and earnings*. Both are used to regionalise the national totals given by the *supply-and-use tables*, which are compiled at the national accounts department. These databases come from other departments, along with quality reports or descriptions of deviating figures.

Structural business statistics
Dutch business statistics are compiled on the basis of a large-scale survey among all large companies, and an additional sample survey among the smaller ones, specified per employee group. Large companies are defined as companies with over 50 employees (in some industries: over 20 employees).[2] For some industries tax records are used for information on companies with fewer than 10 employees.
The sample part of the survey is carried out among small companies, specified per size, i.e. number of employees.
The size of the survey varies strongly between the industries. Overall more than 60,000 companies are approached, which is about 8 percent of the total number of companies in the Netherlands. The business statistics cover about two-thirds of the industries according to the most detailed classification of around 250 industries.
All collected data are checked in terms of consistency and completeness, and whether the year-on-year change is plausible. This is done by comparing the input with the response in previous years and, if possible, with the response of the same companies in other surveys. If data on previous years are not available, a comparison is made with other companies of a similar size in the same industry. Any established inconsistencies are corrected.
Since reporting year 2000, the business statistics for most industries have been compiled according to the approach described above. Before 2000, each industry used different questionnaires, and different methods of registration, estimation and grossing up. With the new approach, the content and processing of questionnaires was standardised and verification and analysis of the micro-data was computerised. In addition, a new method was introduced for grossing up data for KAUs not in the sample and for non-response. Lastly, the use of external register data (e.g. from the tax authorities) was introduced in order to reduce the response burden for companies. In addition, these data offer better information on the demography of enterprises and the dynamics of industries. Some breaks in series are inevitable, but in the long run, quality will improve.

Statistics on employment and earnings
In addition to the business statistics, the annual employment and earnings survey of Statistics Netherlands is an important source for regional data. This large-scale survey gives a detailed overview of the number of jobs in both public and private sector organisations at municipality level.
Until reporting year 2005, data were collected mainly by questionnaire and taken from salary records. About 70,000 of 85,000 approached employers and organisations responded to the survey. Overall the response accounted for around 5.2 million jobs, 74 percent of the total number. The survey covers KAUs in all industries and employee groups. It also provides the number of employees in local units of multiregional KAUs.
From reporting year 2006 onwards, a major part of the data is collected using external labour registrations. As these registers offer no regional information on multi-regional KAUs, an additional survey is conducted to gather this information.

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[2] In the general business register, companies are classified according to the number of employees. This classification is used for the SBS (sample) surveys and the employment survey. Large companies are companies in groups 6 - 9, or in some industries, in groups 5 - 9.

In addition to the annual data on the numbers of employees, Statistics Netherlands compiles year-on-year comparable datasets. These are created to make a reliable comparison between year t-1 and t-2. The datasets are corrected for changes in industry classification and changes in municipal boundaries.

Supply-and-use tables
The national supply-and-use tables are key input for the regional accounts as they determine the national totals per industry. At the level of around 250 industries, the supply-and-use tables provide detailed information on produced and consumed goods and services. Although the regional accounts are compiled at the level of 118 subgroups, sometimes a higher level of detail is used. For instance, if a regional indicator is available for only one industry in the subgroup, this industry is regionalised separately. Sometimes even the levels of groups of products (which form the basis of the supply and use tables) are used for regionalising.

Methods

Regional GVA is compiled primarily using the production method. The income method is used as well, for instance to calculate the GVA of the government sector. The standard method in use for regionalising is a mix of (pseudo) bottom-up and top-down methods.
The compilation of GVA according to this method comprises four steps.
1. First, the group of large companies (over 20 or over 50 employees), which are all included in the survey, are notified. The output, intermediate consumption, etc. of mono-regional KAUs is allocated bottom-up to their region of residence.
2. Next, the variables of multiregional KAUs are distributed. Because there are no business statistics at the level of local KAUs, this is done with the aid of employment data. The employment and earnings survey provides information on the number of employees per municipality for almost every (big) multiregional KAU. The output, etc. of the multiregional KAUs is distributed in proportion to the number of employees of their local units (see also 3.1.3).
3. The third step is regionalising figures for the small companies. The samples for the small companies are taken for the whole country, with no regional stratification. These figures are regionalised top-down, using employment data as an indicator.
4. Lastly, the figures for the large and the small companies are totalled per region. If the totals do not match the totals obtained from the supply-and-use tables, and they never do, the remainder is distributed proportionally across the regions. Now output and intermediate consumption are regionalised, regional GVA is calculated by subtracting intermediate consumption from output for each region.

**Figure 3.3 – Steps in regionalising process**
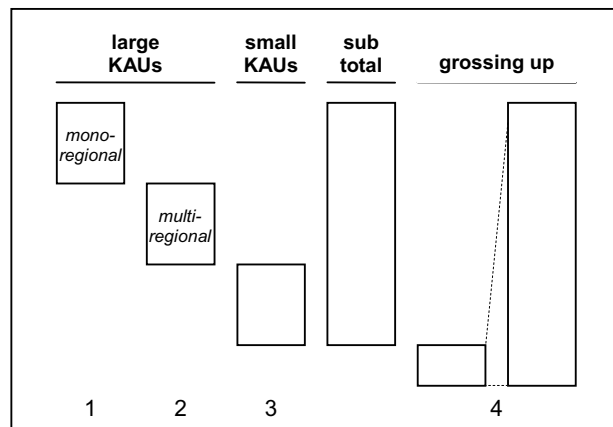
Since reporting year 2006, the employment data have been obtained from standardised registers. This has had consequences for the regionalisation of multiregional companies (step 2). The registers used for the SBS and the employment survey usually provide no regional information on multiregional KAUs and organisations. Hence, an additional survey is carried out among large multiregional companies and organisations to establish a proper regionalisation.

The regional accounts compilation system

Because the compilation of GVA is done using the same sources and methods for most industries, a SQL application was built. This application is maintained and managed centrally. About two-thirds of the industries are completely compiled using this system. Among them are most subgroups of the groups D, F, G, H and I. For other industries, the data are analysed and prepared without using the application. The data for these industries are loaded into the application at a later stage to make some calculations (i.e. grossing up), for storage and to produce compilation tables, which are used to verify the figures and assess the plausibility. The input of the system consists of six variables: output, intermediate consumption, compensation of employees, other taxes on production, other subsidies on production and employment employees. Gross value added and the operating surplus are calculated as balancing items after regionalisation. The data on employees are combined with data on self-employed persons without the use of the compilation system. A schematic overview of the system is presented below.

Figure 3.4 – Regional accounts compilation system
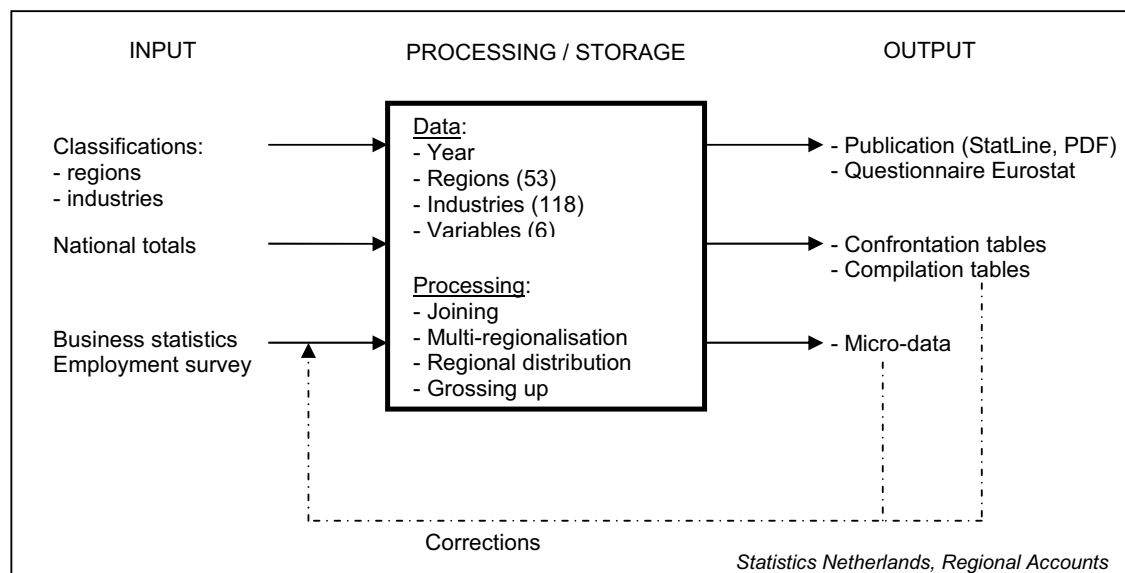
Input
The classifications of industries and regions form the basic framework for the system. The national totals for each variable and industry are obtained from the supply-and-use tables compiled for the national accounts. Provisional figures for year t-2 are available for 118 industries, definite year figures (t-3) for around 250 industries.
Detailed information of companies is available at KAU-level in two databases: the business statistics and the employment and earnings survey. Both databases use Statistics Netherlands' general business register as a framework for their surveys.

Calculation / storage

The application compiles the regional figures in five steps. First, the various databases are linked. Second, output, intermediate consumption, etc. of large KAUs that operate only in one region, is allocated to the regions concerned. Third, the variables of large KAUs that operate in multiple regions is distributed based on the number of jobs per establishment (community).

The fourth step is regionalising figures for the small KAUs using the numbers of employees in the lower employee groups as an indicator.

Lastly, the figures for the large and small KAUs are totalled. If the totals do not equal those of the national accounts, the remainder is grossed up proportionally across the regions.

In addition to compiling the regional figures, the application also serves as an interface to open and access the databases it stores.

Output

The output of the system includes confrontation tables and compilation tables. The Regional accounts team uses both to assess the year-on-year change and the ratio between large KAUs, small KAUs and the difference with the national totals. Where necessary, corrections to the business statistics and the employment survey data are made. These are stored by the system and are taken into account when the steps are repeated.

Assessing the year-on-year change

Generally speaking, the Regional accounts team takes the national year-on-year changes as given. The statistics are compiled by various other departments and it is beyond the remit of regional accounts to redo their work. However, when assessing the year-on-year changes per region, some changes might be considered exceptional and constitute a reason for further investigation of the source data. The metadata, described in section 3.1.1, are important for verification of the regional figures. The issue of assessment of the figures is further elaborated in chapter 4.

3.1.1   Available sources and information

Metadata are available for all sources used compiling the regional accounts. Apart from information on the type of survey, the survey design, the sample size and non-response, specific information on developments are provided annually. A description of regional results is not given, as the provided data have not yet been regionalised.

The business statistics are delivered together with quality reports per industry and an electronic list of all major year-on-year changes. The list is an accessible tool, making it easier to discover changes at industry or KAU level. The quality reports give an overview of the specific methods and sources, the sample, the quality of the results and of developments in the industry. This includes dealing with occasional imputations and non-response and the developments of individual major KAUs.

For the employment and earnings survey, extra information about noticeable changes is available. This is presented in a database containing the KAU identification (size class, industry codes, regional codes), the change in number of employees compared with the previous year and an explanation for this change.

Another source related to the employment and earnings survey is a document containing information on the clustering of KAUs. This file gives an overview of changes in the registration of companies together with the numbers of employees concerned.

To investigate the national developments in an industry, data of the supply-and-use tables are accessible. With the aid of special software, the composition of the national totals can be analysed at industry level (around 250 industries). For example, the size of estimations and

corrections made by other departments, or the share of wages in the GVA can be examined. The composition of output and intermediate consumption according to groups of products is also available through this software.

3.1.2   Use of benchmarks and extrapolations

For the compilation of reporting year t-3 (= definite) no use is generally made of benchmarks and extrapolations. For each industry group, sources are available for bottom-up or top-down compilation of regional figures. In exceptional cases, when these sources are not available or the results are judged to be unrealistic, then benchmarks and extrapolations are used. There are two possibilities:
- The regional distribution of the preceding year is maintained. For the industry concerned, each region is assigned the same change as the national figures.
- The regional distribution of the preceding year is taken as benchmark. The development per region is based on the number of jobs, the number of inhabitants, or another indicator. Lastly, to assure consistency with the national accounts figures, the regional figures are adjusted proportionally.

3.1.3   Treatment of ancillary activities

The unit of observation for the most important source statistics of the regional accounts, the business statistics (SBS) and the statistics on employment and wages, is the kind-of-activity unit (KAU, in Dutch: *bedrijfseenheid*). A KAU may consist of more than one local KAU, located in one or more regions. There is no available industry classification for each separate local KAU. Except for some very rare cases, the number of employees is used to distribute gross value added of each (large) KAU over the regions concerned, irrespective of the actual activities executed in each local KAU.

One of the exceptions is the treatment of a large oil refinery with a production plant in one region and an office (head office) in another region. The number of employees (or the compensation of employees if available) will in most cases be a reasonable key to distribute gross value added over the local KAUs. However, gross operating surplus is part of gross value added and consists of net operating surplus and consumption of fixed capital. Especially in case of large capital-intensive industries, the amount of consumption of fixed capital is substantial. Consumption of fixed capital of the head office is limited to the building and IT equipment. By far the largest part of this item should be assigned to the location of the production plant. So far in this case, only a small part of GVA is assigned to the region of the head office, namely just enough to 'pay' the compensation of employees. Assigning no GVA at all to the location of the head office would mean a negative operating surplus for this company in this region.

3.1.4   Treatment of the Extra-regio

Statistics Netherlands calculates Extra-regio GVA in accordance with ESA guidelines. In the Netherlands, the Extra-regio is primarily of significance for the industries Mining and Quarrying (NACE C). A substantial part of natural gas extraction and almost all of the oil extraction takes place on the continental shelf to which the Netherlands has exclusive rights. In addition, the Extra-regio is used for some parts of public administration (NACE L): Dutch embassies and consulates abroad. The sources and methods in use for these industries are described in section 3.2.

3.1.5 Approach to exhaustiveness

Exhaustiveness is dealt with only at the national level. Regional allocation of GVA implicitly means regional allocation of the adjustments for exhaustiveness. If the bottom-up method is applied, the difference between the sum of the regional (bottom-up) figures and the national totals is grossed up proportionally over the regions according to GVA per industry. If the top-down method is applied, the adjustments automatically receive the same regional distribution as GVA per industry. According to the national process table of reporting year 2001 (part of the Dutch GNI-inventory) the adjustment for GVA for exhaustiveness was 6,643 million euro. This is 1.7 percent of total GVA.

3.1.6 Calculation of FISIM by user industries

Regional gross value added per industry is calculated by subtracting intermediate consumption from output. The national totals of intermediate consumption include FISIM. The regional estimates of intermediate consumption automatically also include this item. The regional distribution of FISIM follows the regional distribution (per industry) of intermediate consumption. At the end of the process FISIM is re-distributed (per industry) according to GVA (output minus intermediate consumption excluding FISIM). The result of this recalculation is marginal.

3.1.7 Adjustments for commuting

No adjustments are applied for commuting. In general, GVA is allocated to the regions according to information of the statistics on employment and earnings wages. These statistics measure the number of jobs at the location of the local KAUs. According to the residency principle this is correct, so adjustments are not needed.

3.1.8 Transition from GVA to GDP

The difference between gross value added and gross domestic product consists of:
taxes on products (D21)
subsidies on products (-) (D31)
difference imputed and paid VAT

The balance of these items is allocated to the regions according to the regional distribution of GVA (= proportionally).

3.2 Specific methods and sources for compiling regional GVA

For most industries, output and intermediate consumption are regionalised by the same method. This is not explicitly stated in the description. Only if different methods are used to regionalise output and intermediate consumption they are treated separately.
In general, the national totals of the industries are regionalised with the aid of employment data. This can be done in two ways. For most of the industries, the distribution of employees is used as an indicator to distribute output and intermediate consumption top-down. The other method multiplies the regional levels of the previous year by the year-on-year change in the number of jobs. For this calculation, the year-on-year comparable dataset is used. The remainder is then distributed proportionally across the region. There may be differences between the outcomes of both methods, as the year-on-year comparable dataset corrects for changes in industry classification and redivisions of municipal boundaries.

For each group, the output, intermediate consumption and gross value added are given in millions of euros. In addition, for each group, the share in the total amount of GVA and the number of subgroups are shown. Total GVA of the Netherlands for the reporting year 2001 is 397,556 million euro.

3.2.1 Agriculture, hunting and forestry (A) and Fishing (B)

Output (mln euro)	Intermediate consumption (mln euro)	GVA (mln euro)	% of total GVA	# subgroups
23,456	13,279	10,177	2.6	7

Given the moderate size of the fishing industry, in the Netherlands groups A and B are always taken together in publications and official transmissions.

Sources

Supply-and-use tables
Estimates for these subgroups are largely functional. They are based on commodity flow data as opposed to information on commercial units (institutional data). The available functional resources provide exhaustive and high-quality information.

Statistics on employment and wages
For some subgroups, employment data are used for regionalisation.

Agricultural Census
The Agricultural Census is an important source for the regionalisation of agricultural output. This yearly survey is carried out by the Ministry of Agriculture, Nature and Food Quality. It collects annual information on labour and on production of cattle and crops of all agricultural units with significant agricultural activity, around 90,000 units. The ministry checks and corrects for missing values in the response. At Statistics Netherlands, plausibility checks are conducted and where necessary corrections are made.

Land use data
Every three years, a digital map is drawn up of the functional land use in the Netherlands. Overall, 37 functions are distinguished. Each function must be related to a minimum size of 1 hectare.

Methods

Output

1110 Farming
1129 Horticulture
1200 Stockbreeding

For these subgroups, regional production according to the Agricultural Census is used as an indicator for the regional distribution of output.

First, the national totals per group of products are obtained from the supply-and-use tables. The agricultural census provides the production (in units, metric tonnes or hectares) for each municipality and for each group of products. Hence, the production data can be used as an indicator to regionalise the output per group of products.

Next, the output of the groups of products is totalled for each region. Lastly, the regional outcomes are grossed up to equal the national totals.

1300 Other agriculture

Output for this subgroup is regionalised using labour data from the Agricultural Census. The number of non-family workers who work regularly for more than 20 hours per week is used as an indicator for the regional distribution.

These data refer to the whole of **SIC 01 Agriculture and hunting**. The assumption is thus made that the regional distribution of workers of this subgroup is comparable to the whole of the industry.

1400 Agricultural services

This subgroup is regionalised using the number of employees of this subgroup (as obtained from the employment and earnings survey) as an indicator.

2000 Forestry

This subgroup is regionalised using land use data of forestry as an indicator. The land use data of Statistics Netherlands provide the size of forested area per municipality in hectares. The assumption that forested area is a suitable indicator for the regionalisation of forestry output is disputable. However, there is a lack of detailed regional data on forestry. Besides, this subgroup only comprises a very small part of national GVA.

5000 Fishing

From 2001 onwards, regional GVA for this subgroup is calculated by extrapolation. The distribution will be improved at the next benchmark revision.

Intermediate consumption

Intermediate consumption is regionalised with the same indicator for all subgroups except for **1200 Stockbreeding**. In this case, the intermediate consumption is calculated as a fixed percentage of output per region. The proportions were estimated in 2002.

Until 2002, separate data were available on the intermediate consumption of **1200 Stockbreeding**. Regionalising with the same indicator used for output was not an option, considering the major changes this new method would cause. Initially, the average intermediate consumption of 1998-2002 was used as an indicator. However, as a result of changes in the output per region, this method caused incidental negative GVA per region. Hence, the decision was made to use the 2002 ratios of output to intermediate consumption per region for the regional distribution of intermediate consumption. At the next benchmark revision, this method will be reconsidered.

3.2.2 Mining and quarrying (C)

Output (mln euro)	Intermediate consumption (mln euro)	GVA (mln euro)	% of total GVA	# subgroups
14,646	3,507	11,139	2.8	2

This industry is analysed in two subgroups at the regional accounts team:

11000 Production of crude petroleum and natural gas
14000 Other mining and quarrying production

The major part is the production of subgroup **11000 Production of crude petroleum and natural gas**. For this subgroup, the available business statistics are not suitable for the regionalisation of GVA. However, the production of natural gas and oil is recorded quite well. With the aid of several sources, a reliable distribution of the production can be drawn up. Calculations for the other subgroup, **14000 Other mining and quarrying production**, are done with the standard methods, using the regional accounts compilation system.

Sources

Supply-and-use tables
This source is described in section 3.1.

Statistics on employment and earnings
This source is described in section 3.1.

Number of employees on the continental shelf
The figures of the employment survey do not specify employees working on the Dutch part of the continental shelf. These offshore workers are registered at KAUs on the mainland. Therefore, figures on the number of employees working on the continental shelf are received annually from the State Supervision of Mines (part of the Ministry of Economic Affairs). These numbers are available for each company.

Annual review 'Oil and gas in the Netherlands'
This report, compiled at the request of the Ministry of Economic Affairs, provides data on the exploration and production of natural gas and oil per licence in Sm^3.

Annual report of GasTerra
The report provides data on the production by GasTerra, a major Dutch company operating on the European natural gas market. In addition, information on employees and wages is collected from this source.

Methods

As the available business statistics for **11000 Crude petroleum and natural gas production** are not suitable, most calculations are carried out without the use of the regional accounts compilation system. Instead, calculations are executed using a set of spreadsheets. This is done in three steps.

First, the number of employees per region is determined based on data from the employment and earnings survey. This survey does not allocate employees to the Extra-regio. Therefore, a correction is made. For each company, the number of employees working on the continental shelf is subtracted from the region with the highest number of employees and allocated to the Extra-regio.

Next, this new distribution of employees is used as an indicator for the top-down distribution of compensation of employees. This way, the output related to employment is calculated using the income method.

Lastly, the national totals of output (not including the output related to employment) and intermediate consumption are distributed top-down using the actual production of oil and gas per region as an indicator. The production per region is derived from the production per licence (available in the *Annual review 'Oil and gas in the Netherlands')* by linking the licences to the regions.

Re 1: An exception to the procedure described above is the processing of GasTerra; variables for this company are allocated directly to the region of residence.

Re 2: A distinction is made between licences for production on the continental shelf and licences for production on the mainland. The production on the continental shelf is taken together and is allocated to the Extra-regio. The Extra-regio accounts for about 35 percent of the total natural gas production and nearly all oil production.

Re 3: After reconsidering the regional results, the use of top-down distribution of output and intermediate consumption raised some questions. It turned out that part of the output of this industry was allocated to regions where no actual production took place. On the other hand, data on the production per site (which became available in the end of 2006) proved that no output was allocated to some regions with considerable natural gas production. It was concluded that the (names of the) licences did not always correctly match the location of the actual sites. At this moment, data on the production per site are not in use. These data will be used as soon as possible, probably from the next revision.

3.2.3   Manufacturing (D)

Output (mln euro)	Intermediate consumption (mln euro)	GVA (mln euro)	% of total GVA	# subgroups
216,545	157,826	58,719	14.8	43

The business statistics and employment statistics available for manufacturing are suitable for the calculation of regional GVA. For nearly all the 43 subgroups, the standard method as described in section 3.1 is used. The only exception is a subgroup of **Other manufactured goods n.e.c.**:

36631 Workshops for sheltered employment

In this case, a minor correction is made before the data are put into the regional accounts compilation system. The procedure is described below.

Sources

Business statistics (covering all of the about 100 entities in this industry) and the statistics on employment and earnings.

Methods

Although this subgroup is part of group **D Manufacturing**, it is part of the government sector, as a large amount of subsidies is paid by the government. First, these subsidies are added to the output as provided in the business statistics. Because the amount of subsidies is available per KAU in the business statistics, the adding up is done at KAU-level. After this calculation, the data is loaded into the regional accounts compilation system for the rest of the computations. Similar to other subgroups, regionalisation of the output (now including the

subsidies) is done bottom-up for the large KAUs, and top-down with the use of employment data for the small KAUs. Intermediate consumption is distributed the same way, after which regional GVA is calculated.

3.2.4 Electricity, gas and water supply (E)

Output (mln euro)	Intermediate consumption (mln euro)	GVA (mln euro)	% of total GVA	# subgroups
22,964	17,498	5,466	1.4	2

Sources

Supply-and-use tables
This source is described in section 3.1.

Statistics on employment and earnings
This source is described in section 3.1.

Energy production data
Energy production data are obtained from the Domestic Energy Consumption Survey, a system that integrates the results of 10 statistical series and presents the energy balance sheet for the Netherlands as a whole.

Drinking water production data
Data on the production of drinking water are obtained from the National Institute for Public Health and the Environment (RIVM). The production data are provided in litres per pumping station. The geographical coordinates of the pumping stations are also available, so regionalisation at any level is possible.

Methods

40000 Electricity and gas

SBS as well as employment data are available for this subgroup. Normally, the employment data are used to regionalise multiregional firms. However, because of a mismatch between the employment and earnings survey and the SBS, no proper multi-regionalisation could be applied. This mismatch is caused by the dynamics that occur in this sector as a result of privatisation and expansion strategies. Hence, it was decided to regionalise output and intermediate consumption as provided by the supply-and-use tables top-down.
Part of the subgroup, *Energy production,* is regionalised using energy production data as an indicator. As this industry is rather capital intensive, employment data are not suitable for regionalisation. The variables of the major part (the remaining 75 percent) are distributed using employment data as an indicator.

41000 Water

Output and intermediate consumption for this subgroup are regionalised using drinking water production data as an indicator. At the benchmark revision of 2001, the pumping stations were allocated to one of the 52 regions, and an initial regional distribution of drinking water production was established. Output and intermediate consumption were regionalised according to this distribution.
In later years, this distribution was extrapolated with the use of provincial changes in drinking water production or (in recent years) the national change.

3.2.5   Construction (F)

Output (mln euro)	Intermediate consumption (mln euro)	GVA (mln euro)	% of total GVA	# subgroups
64,656	41,951	22,705	5.7	6

The business statistics and employment statistics available for construction are suitable for the calculation of regional GVA. For the reporting year 2001 all 6 subgroups, the standard method as described in section 3.1 is used. Currently one subgroup is treated differently.

45202 Civil engineering

The Civil engineering industry gave for the reporting year 2004 unreliable results when treated with the standard method as described in section 3.1. This is caused by poor results of the SBS survey due to reorganisations and take-overs of a few big companies in this industry. Until the next major revision Civil engineering will be treated by extrapolation. The regional distribution of the preceding year is taken as benchmark. The development per region is based on the number of jobs of employees. Finally, the regional figures are adjusted to the national accounts figures (proportionally).

3.2.6   Wholesale and retail trade; repair (G)

Output (mln euro)	Intermediate consumption (mln euro)	GVA (mln euro)	% of total GVA	# subgroups
95,288	41,034	54,254	13.6	5

The business statistics and employment statistics available for Wholesale and retail trade and repair are suitable for the calculation of regional GVA. All 5 subgroups are dealt with applying the standard method as described in section 3.1.

3.2.7   Hotels and restaurants (H)

Output (mln euro)	Intermediate consumption (mln euro)	GVA (mln euro)	% of total GVA	# subgroups
16,094	8,234	7,860	2.0	1

The business statistics and employment statistics available for Hotels and restaurants are suitable for the calculation of regional GVA. The standard method as described in section 3.1 is applied.

3.2.8   Transport, storage and communication (I)

Output (mln euro)	Intermediate consumption (mln euro)	GVA (mln euro)	% of total GVA	# subgroups
63,335	34,971	28,364	7.1	12

Regional GVA for almost all subgroups of this industry is calculated using the standard method in use by regional accounts. The only subgroup that is treated separately is:

60300 Transport via pipeline service

Sources

Supply-and-use tables
This source is described in section 3.1.

Methods

In 2002, the business statistics for this relatively small subgroup (0.1 percent of total GVA) were considered inappropriate for compiling GVA; too many corrections had to be made, and this source therefore offered insufficient quality. Since then, the regional distribution of the national totals is based on an extrapolation of the previous definite year figure. This computation is made with the aid of the regional accounts compilation system.

3.2.9 Financial intermediation (J)

Output (mln euro)	Intermediate consumption (mln euro)	GVA (mln euro)	% of total GVA	# subgroups
49,503	25,158	24,345	6.1	4

Sources

Supply-and-use tables
The national totals per subgroup are obtained from the supply-and-use tables. Furthermore, the value of royalties/licences for special purpose entities (SPEs) is obtained separately.

Statistics on employment and earnings
The year-on-year comparable dataset of employees per region is used.

Dutch Central Bank data
In 2004, the Dutch Central Bank (DNB) provided specific data about the location SPEs. In addition, information on revenues and expenditure for SPEs involved in royalties/licences transactions was received. At the moment, no recent data are available.

Methods

> **65000 Banking**
> **66000 Insurance and pension funds**
> **67000 Activities auxiliary to financial intermediation**

The first years after the most recent benchmark revision, output and intermediate consumption of these subgroups were regionalised based on the regional employment and earnings. For reporting years 2004 and 2005, the year-on-year comparable dataset was used. The regional values are proportionally grossed up to equal the national totals.

> **65234 Special purpose entities**

The regionalisation of this subgroup is done in a specific way. The output related to royalties/licences transactions is distributed separately (around 25 percent of the output of this subgroup). This is done with the aid of financial information on SPEs, provided by the Dutch Central Bank.
First, the balance of revenues and expenditures is totalled per region. The balance per region is used as an indicator for the distribution of output related to royalties/licences of SPEs.
Next, the remainder of the output is regionalised. For this part, the regional distribution of all establishments is used as an indicator.
Lastly, the regional outcomes for both parts are totalled and grossed up to equal the national totals for this subgroup. Intermediate consumption is regionalised with the same distribution as for output.

Re 1: It is assumed that every local SPE has equal output.
Re 2: The Dutch Central bank data on SPEs were received in 2004 and were used for the compilation of reporting year 2001. The regional distribution for 2001 was retained in the following years.

3.2.10 Real estate, renting and business activities (K)

Output (mln euro)	Intermediate consumption (mln euro)	GVA (mln euro)	% of total GVA	# subgroups
143,725	58,955	84,770	21.3	11

In this group, three subgroups related to real estate are processed with a specific method:

70201 Exploitation of accommodation
70110 Real estate agents
70204 Exploitation of buildings

Sources

Supply-and-use tables
This source is described in section 3.1.

Statistics on employment and earnings
This source is described in section 3.1.

Housing survey
Numbers of rented and owner-occupied dwellings per municipality are available through a survey carried out by the Ministry of Housing, Planning and the Environment (VROM). This is a long-term survey, combining data from multiple sources. Besides numbers and types of dwellings, this source also provides information on the average rents per municipality class.

Stock of dwellings and value of real estate
Statistics Netherlands compiles statistics on the stock of dwellings and on the value of real estate per municipality. As required by law, municipal administrations provide data on the number of dwellings and on the value of various real estate annually. All collected data are checked for consistency and completeness, and on whether the year-on-year change is plausible. Any inconsistencies are corrected.

Social statistics database (SSB)
The core of the SSB consists of linked surveys, databases and registers with demographic and socio-economic data. A number of SSB satellites have been developed to describe certain topics in more detail. By linking the registers, all data on persons, jobs, self-employed persons, and social benefits become available. As the information is available for several years, people can be followed through time. In addition, by linking the sources the quality of the data can be improved. After a comparison of data from different sources on the same topic, possible errors can be corrected.
Among other things, the SSB provides numbers of self-employed persons (e.g. real estate agents) per municipality at 5-digit industry level. These numbers are obtained from fiscal registrations of the tax authorities. With the use of the General Business Register and data from the tax authorities, the location of 98 percent of real estate agents can be established. The remaining 2 percent are located at their home address.

Methods

70201 Exploitation of accommodation

Output

The output for this subgroup is analysed at the level of groups of products (source: supply-and-use tables) to realise a reliable distribution of the housing services output for rented and for owner-occupied dwellings. The major groups of products to be distributed are *Property leasing*, *Own-accommodation exploitation* and *Management of immovable property on a fee or contract basis*. For each product group, the totals of the supply-and-use tables are distributed across the regions based on specific calculations. In sum, this subgroup accounts for around 5.5 percent of GVA.

Property leasing
Regional *property leasing* output is calculated by modifying the regional distribution of the previous year with the year-on-year change in the number of rented dwellings. This method has been used since the latest benchmark revision, in reporting year 2001. The initial distribution of the benchmark revision was estimated by calculating the sum of average rents of all rented dwellings per region. As the average rents per municipality were not available, the average rents per municipality class (grouped by size) were used (source: Housing survey). These figures were aggregated to estimate the average rent per region-52. The difference with the sum of rents according to the national accounts was grossed up proportionally.
The regional year-on-year change in the number of rented dwellings is calculated in a number of steps. First, the share of rented dwellings per municipality is calculated by dividing the number of rented dwellings by the total number of dwellings (source: VROM, Housing survey). Next, the average stock of dwellings of the reporting year is calculated by taking the mean of the stock at the start and the end of the year (source: Statistics Netherlands). By multiplying these two outcomes, the number of rented dwellings per municipality is calculated. These figures are aggregated to the 52 regions in use at Regional accounts.
If the same calculations are done for the previous year, the year-on-year change of the regional numbers of rented dwellings can be calculated. These year-on-year changes are used to calculate the new regional values of *Property leasing*. Lastly, these new outcomes are raised or lowered proportionally to equal the national totals for this product group.

Re: Municipal borders are changed almost every year, usually by merging two or more municipalities into a new one. The tenure breakdown of past years, calculated with VROM data from the Housing survey, is only available for municipalities according to the most recent division. If municipalities have merged, they are given the figures that apply to the municipality into which they are merged. This step causes marginal error because the actual share of rented dwellings of the former municipality will differ slightly from the share it has after merging with other municipalities.

Own-accommodation exploitation
The regional distribution of output related to *Own-accommodation exploitation* is based on the rental values of dwellings, as determined at municipality level.
First, the number of owner-occupied dwellings is calculated, in a similar way as is done for the number of rented dwellings. The average rental value per municipality is then multiplied with the number of owner-occupied dwellings, resulting in the rental value per municipality. After aggregation to the 52-region level, the outcomes are raised or lowered proportionally to equal the national totals for this product group.

Other groups of products
As the product group *Management of immovable property on a fee or contract basis* is related to *Property leasing*, the output is distributed using *Property leasing* as an indicator. Lastly, these major groups are summed and raised proportionally to equal the total output of subgroup **70201 Exploitation of accommodation**. By doing so, the remaining groups of

products in this industry (accounting for only around 0.4 percent of the total output) are automatically distributed.

Intermediate consumption

Groups of products of intermediate consumption are related to both rented and owner-occupied dwellings. Therefore, it is difficult to realise a regional distribution based on groups of products. Intermediate consumption is distributed based on the sum outputs of *Property leasing* and *Own-accommodation exploitation*.
However, intermediate consumption in the supply-and-use tables is including FISIM. As FISIM is related to owner-occupied dwellings, it is first subtracted from intermediate consumption, then redistributed based on the rental value of owner-occupied dwellings, and lastly added to the initial intermediate consumption minus FISIM.

70110 Real estate agents

This subgroup consists of four 5-digit level industries: *Project development*, *Immovable property dealings*, *Intermediation in the purchase, sale, rental and leasing of immovable property* and *Management of immovable property*. Output and intermediate consumption of this industry are available in the supply-and-use tables and are regionalised the same way. First, the number of employed persons in this subgroup is calculated by adding up the number of self-employed persons (source: SSB) and the number of employees (source: employment and earnings survey) in the four sub-industries. If the same calculations are done for the previous year, the year-on-year change can be calculated. Next, the variables are regionalised by modifying the regional values of the previous year with the year-on-year change in the total number of employed persons per region. Lastly, these new outcomes are raised or lowered proportionally to equal the national totals for this subgroup.

70204 Exploitation of non-residential buildings

The regionalisation of output and intermediate consumption of this subgroup is established with a specific method. *Exploitation of buildings* is a separate group of products in the supply-and-use tables. The National accounts department calculates a value for this group of products for each industry. Hence, the intermediate consumption of subgroup 70204 is allocated to all industries at national level.
It is assumed that the share of this group of products in the intermediate consumption of each industry is equal for all regions.
After regionalising the intermediate consumption of all industries, the intermediate consumption related to exploitation of buildings can be calculated for each region (by distributing it proportionally across the regions).
By adding up the intermediate consumption related to the exploitation of buildings for each industry, a regional distribution of the group of products is established. This distribution is used to regionalise the national totals of output and intermediate consumption for subgroup 70204.

3.2.11 Public administration and defence; compulsory social security (L)

Output (mln euro)	Intermediate consumption (mln euro)	GVA (mln euro)	% of total GVA	# subgroups
47,892	19,876	28,016	7.0	6

Sources
Supply-and-use tables
This source is described in section 3.1.

Statistics on employment and earnings
This source is described in section 3.1. The Ministry of Defence is included in the survey, so regional data on compensations and the number of employees are available annually.

Armed forces activities
Already before the latest benchmark revision, by way of exception regional distributions of employees and wages of the armed forces were provided to Statistics Netherlands. As no recent data could be obtained, these distributions are still in use. New national totals of wages and numbers of employees are available annually.

Consumption of fixed capital by the government
Regional data on gross fixed capital formation by the government are compiled at the regional accounts team.

Methods
> **75112 State**
> **75113 Municipalities**
> **75114 Compulsory social insurance**
> **75119 Other public administration**
> **75240 Police**

All subgroups, except for **75220 Defence activities**, are processed together. To compile regional GVA for industries in this group, the income method is used. According to this method, gross value added is calculated as following:

> Gross operating surplus + compensations of employees + other taxes on production – other subsidies on production = gross value added

The national totals for all variables are obtained from the supply-and-use tables. Next, these variables are regionalised with the use of an indicator or with year-on-year changes. The gross operating surplus is distributed based on the average consumption of fixed capital by the government in the past, for around 35 years back. The other variables are distributed with the aid of the year-on-year comparable employment dataset. Lastly, the gross value added is calculated for each region separately and the outcomes are grossed up to equal the national totals.

Figure 3.5 – Regionalising variables of Public administration etc.

variable	code	indicator
Gross operating surplus	B.2g	mean consumption of fixed capital
+ Compensation of employees	D.1	employment data
+ Other taxes on production	D.29	employment data
– Other subsidies on production	D.39	employment data
= Gross Value Added	B.1g	

Source: ESA 95

75220 Defence activities

For this subgroup, regional information is available on employees and wages of both the armed forces and the Ministry of Defence. For the armed forces, the total number of employees is regionalised according to a distribution in use from the latest benchmark revision. Next, the regional numbers of employees of the Ministry of Defence are added. This new distribution is used as an indicator to regionalise the gross operating surplus of this subgroup.
A regional distribution of wages is calculated in a similar way. First, the new wages per region of the armed forces are calculated by extrapolating the previous distribution. The new

regional wages of the ministry are calculated based on the development of the number of employees per region. Then the wages of the armed forces and the wages of the ministry are summed up per region. With this new distribution, the national totals of the other variables are distributed. Lastly, the gross value added is calculated per region.

Figure 3.6 – Regionalising variables of Defence activities

variable	code	indicator
Gross operating surplus	B.2g	employment data
+ Compensation of employees	D.1	data on wages
+ Other taxes on production	D.29	data on wages
– Other subsidies on production	D.39	data on wages
= Gross Value Added	B.1g	

3.2.12 Education (M)

Output (mln euro)	Intermediate consumption (mln euro)	GVA (mln euro)	% of total GVA	# subgroups
21,008	4,586	16,422	4.1	4

Sources

Supply-and-use tables
This source is described in section 3.1.

Statistics on employment and earnings
This source is described in section 3.1.

Methods

80100 Primary education
80200 Secondary education
80300 Tertiary education

As for group (J) Financial intermediation, an initial regional distribution based on employment and earnings per region was made at the latest benchmark revision. In the following years, output and intermediate consumption of these subgroups were regionalised with the use of the year-on-year comparable dataset. The regional values are proportionally grossed up to equal the national totals.

80400 Other education

For this subgroup, the national totals are also distributed using the number of employees per region as an indicator.

3.2.13 Health and social work (N)

Output (mln euro)	Intermediate consumption (mln euro)	GVA (mln euro)	% of total GVA	# subgroups
41,920	11,623	30,297	7.6	7

All industries in the group Health and social work are treated with a specific method. The group consists of 7 subgroups:

85110 Hospitals and medical specialists
85115 Psychiatric care
85190 Other medical care
85200 Veterinary activities
85311 Nursing homes and homes for the elderly
85312 Care for handicapped people
85390 Other social welfare institutions

Sources

Supply-and-use tables
This source is described in section 3.1.

Statistics on employment and earnings
This source is described in section 3.1.

Social statistics database (SSB)
(See also description in section 3.2.10). The SSB provides yearly information on self-employed medical specialists, e.g. psychiatrists, dentists, veterinarians, etc. Sometimes, if the data are not yet available when regional GVA is compiled, the data of a previous year are used. However, as the numbers of self-employed shows little change over time, this causes only marginal error.

Population data
Statistics Netherlands compiles data on the size and composition of the population (on 1 January) and on year-on-year changes herein. The source for these figures is the municipal population registration. In principle this registration covers all people residing in the Netherlands for an indefinite period of time.
Estimations are made for missing values.
For the distribution of GVA related to health and social work activities, the average total population and the average population per age group are calculated. The latter is calculated by taking the mean between L_{t-1} on 1 January and L_t on 31 December, where L_t is the number of people in an age group in year t. For health and social work activities, the age groups 0-5 years and 65+ in groups of 5 years are of relevance. These numbers are calculated at municipality level and aggregated to the 52 region-level.

Medical consumption data
Data on the medical consumption is derived from a long-term, modular sample survey on the life situation of the population (POLS). This annual survey consists of a basic core questionnaire in addition to several theme-based modules. In one of these modules, respondents are asked about their contacts with general practitioners, medical specialists, physiotherapists, etc.
Data are available at the level of 47 'Municipal Health Services regions'. Figures for these regions have to be converted to the 52-region level in use by Regional accounts. As both regional divisions are made up of combining municipalities, the figures for medical consumption can be redistributed proportionally to the average population per municipality. The health module of the survey covers approximately 10,000 people each year. The 2004, 2005 and 2006 POLS/medical consumption surveys were combined to achieve results that are more reliable.

Methods

In general, the national totals of the industries in this group are regionalised with the aid of employment data. For most industries, the distribution of employees is used as an indicator to regionalise output and intermediate consumption top-down. In addition, other variables are also used as an indicator.

General remarks:
- For each industry in this group, intermediate consumption is regionalised with the same method in use for the regional distribution of output.
- The values of the 5-digit level industries from the source data are adjusted proportionally to meet the national totals derived from the supply-and-use tables.
- A number of subgroups in this group consist of multiple 5-digit level industries. If different methods were used in one subgroup this is explained.

85110 Hospitals and medical specialists

At 5-digit level industries, this subgroup consists of four categories of hospitals and four types of practices: psychiatrists, other medical specialists, dental surgeons and orthodontists. For the hospitals, output and intermediate consumption are regionalised only with the aid of employment and earnings survey data as an indicator. Data on medical specialists are available in the social statistics database (SSB). For each region, the number of self-employed medical specialists is added to the total number of employees working at practices of medical specialists. Output and intermediate consumption for these industries are distributed proportionally to the total number of employed persons as an indicator.

85115 Psychiatric care

Output and intermediate consumption of this subgroup are distributed using employment data as an indicator.

85190 Other medical care

The subgroup **Other medical care** consists of a number of industries which are treated separately. These include general practitioners, dentists, paramedics and health care support.

For *general practitioners, dentists and physiotherapists*, data are available on the number of consultations per region (source: POLS/medical consumption data). Output and intermediate consumption of these practices are regionalised with the aid of this indicator.

In the case of *midwives*, both the employment survey and the numbers of self-employed are used to regionalise output and intermediate consumption. For each region, the number of self-employed midwives is added to the total number of employees working at midwifery practices. Output and intermediate consumption are distributed proportionally to the total number of employed persons.

For *other paramedical practices* (excluding midwives and physiotherapists), regionalisation of output and intermediate consumption is realised with the number of employees per region as an indicator.

Support for health care covers a variety of activities such as ambulance services, blood banks, thrombosis care, laboratories and other back-up services. Output and intermediate consumption are regionalised with the number of employees per region as an indicator. The two remaining industries in this subgroup, *health and safety executives* and *basic health activities* are treated in the same way.

85200 Veterinary activities

Data on self-employed people in this subgroup are available in the social statistics database (SSB). For each region, the number of self-employed veterinarians is added to the number of employees working at veterinary practices. Output and intermediate consumption for this industry are distributed proportionally to the total number of employed persons as an indicator.

85311 Nursing homes and homes for the elderly
85312 Care for handicapped people

For these two industries, regionalisation of output and intermediate consumption is done using the number of employees per region as an indicator.

85390 Other social work activities

This subgroup consists of a number of industries, including youth welfare work, reception centres, home care, child care, care for the elderly, etc. For most industries, output and intermediate consumption are regionalised with the number of employees per region as an indicator. Only *child care* and *care for the elderly* are treated separately. In these cases, regionalisation is established based on the distribution of the average population of young children (0 to 5 years) and elderly people (65 years and older) respectively.

3.2.14 Other community, social and personal service activities (O)

Output (mln euro)	Intermediate consumption (mln euro)	GVA (mln euro)	% of total GVA	# subgroups
29,238	15,841	13,397	3.4	6

The group of *Other community, social and personal service activities* consists of six subgroups. Only subgroup **93000 Other personal services** is compiled bottom-up using the standard method. The methods used for the other subgroups are described below.

Sources

Supply-and-use tables
This source is described in section 3.1.

Statistics on employment and earnings
This source is described in section 3.1.

Methods

90000 Private environmental services
90001 Government environmental services

For these subgroups, regional distribution of the national totals is realised with the number of employees as an indicator. Business statistics are available, but are considered unsuitable for this subgroup.

91000 Management and labour organisations

Output and intermediate consumption for this subgroup are regionalised with the number of employees as an indicator. If employment data are considered unreliable, the mean of the number of employees per region in the past 3 years is used as an indicator (indicator = (2003 + 2004 + 2005) / 3). This was the case for reporting year 2005.

92710 Gambling
92900 Other culture, sport and recreational organisations

For these subgroups, regional distribution of the national totals is done with the number of employees as an indicator.

93000 Other personal services

This subgroup contains four industries: *textiles and clothing cleaning, hairdressers and beauticians, undertakers, crematoriums, etc.* and *fitness centres, saunas, etc.* As business statistics are available for these industries, the standard method is applied.

3.2.15 Private households with employed persons (P)

Output (mln euro)	Intermediate consumption (mln euro)	GVA (mln euro)	% of total GVA	# subgroups
1,625	-	1,625	0.4	1

95000 Private households with employed persons

Sources

Supply-and-use tables
This source is described in section 3.1.

Statistics on employment and earnings
This source is described in section 3.1.

Methods

Output and intermediate consumption are estimated at the National accounts department. As there is evidence that private households that employ persons are the wealthier ones, as an estimate the regional distribution of the 9th and 10th 10- percent income groups is used as an indicator.
For each municipality the number of households in the 9th and 10th 10- percent income groups is counted. These figures are aggregated to the 52 regions in use at the regional accounts department. This regional distribution is used as an indicator.
As the income statistics are not available for each year, the distribution of the most recent year is used.

3.2.16 Extra-territorial organisations and bodies (Q)

In line with ESA95 guidelines, no GVA is calculated for this group.

3.3 Regional GVA at constant prices and regional growth rates

The regular production process of the regional accounts results in output and intermediate consumption per industry in current prices for reporting years t-3 (final) and t-2 (provisional). These data are available at the level of 118 industries. The first step for calculating real growth rates is to compile output and intermediate consumption figures in current prices for reporting year t-1. Except for some specific industries (Agriculture, Mining and quarrying, Real estate activities), this step is executed by applying national developments to the regional production structure of t-2. In addition to the national developments for each industry, for some 'basic' industries (trade, hotels, restaurants, subsidised education, etc.) the development of the population is incorporated.

The next step is to calculate production and intermediate consumption in constant prices (double deflation method). This calculation is executed by applying national deflators to each industry, except for Agriculture and Mining and quarrying. For these industries, separate regional data on volume changes are available.

Subsequently, regional GVA at constant prices is calculated by subtracting intermediate consumption in constant prices from output in constant prices.

Lastly, volume changes can be calculated:

Volume changes (%) year t-1:

100 x (GVA in constant prices year t-1 / GVA in current prices year t-2) - 100

Regional GDP and GVA in current prices are published in September of year t for reporting years t-2 (provisional) and t-3 (final). The level of detail of regional GVA is:
year t-2: 13 industries x 53 regions
year t-3: 37 industries x 53 regions

Regional GDP and GVA in constant prices have not been published up to now.

Regional growth rates are published in July of year t according to the following level of detail:
year t-1: 53 regions (only totals, no industries)
year t-2: 13 industries x 53 regions
year t-3: 13 industries x 53 regions

The publication of provisional (growth) figures is subject to discussion. The yearly revisions are substantial. In Chapter 4, the actions undertaken to improve the quality of the estimates of the provisional year figures are discussed.

Chapter 4   QUALITY ASSESSMENT AND IMPROVEMENT

4.1   Self-assessment of the methodology for compilation of regional GVA

Link with national accounts figures

Before discussing a self-assessment of the Dutch methodology for the compilation of regional GVA, it is good to emphasize that the regional accounts start with the national figures of national accounts. The sum of the regional figures must equal the national accounts figures. Obviously, imperfections in the national figures have a negative effect on the regional accounts figures. Sometimes regional accountants can provide information to improve the quality of the national accounts, but in most cases the national accounts figures are just a given.

Continuity versus level estimates

The main aim of the national accounts is to produce macro-economic figures that are comparable, both internationally and in time. International comparability is assured by following the international rules and guidelines. Comparability in time means that new concepts and new sources are introduced in periodic revisions. In the Netherlands levels are re-estimated every 5 to 10 years. Data for previous years are then also adjusted in order to retain comparability in time. As stated in the previous section, the regional accounts totals must equal the national accounts figures. Moreover, for the regional accounts figures, too, the basic principle is that the year-on-year changes are estimated as accurately as possible. If, for instance, new sources result in substantial changes in the regional distribution, these new sources are not applied immediately. Year-on-year changes based on the new sources may be introduced, but new levels (regional distribution) are introduced at the next major revision.

Number of industries

For each industry, sources are examined to see whether it is possible to compile regional GVA figures according to the bottom-up (or mixed) method. If this turns out not to be possible, the top-down method is applied. In most cases, the number of jobs per region is used as an indicator for the regional GVA.
National supply-and-use tables for the Netherlands are available for the final year (t-3) at the level of around 250 industries. This number would be too high for the regional accounts, as each industry has to be examined. The Dutch regional accounts are currently compiled at the level of 118 industries (see Annex 2 – List of industries). This is the same level that is used for the compilation of the provisional Dutch national accounts (yearly figures t-1 and t-2) and the Dutch quarterly accounts.

Quality assessment and documentation

The Regional accounts compilation system produces automatically so-called confrontation tables and process tables. Confrontation tables show the figures (per industry group) per variable (output, intermediate consumption, gross value added, compensation of employees, operating surplus and employment) for each region, for a number of years. The figures are presented in three ways: as levels, absolute changes and relative changes. In addition to these confrontation tables, process tables are also produced for the industries that are compiled according to the bottom-up method. The process tables currently used in the Netherlands show values of output, intermediate consumption, etc. per region divided into the following groups:

- Regional (individual units SBS, mono-regional);
- Multi-regional (individual units SBS, broken down by number of jobs);
- Estimate for small companies (aggregated SBS data, regionalised by the number of jobs);
- Alignment to national accounts total;

Lastly, for all industries the following information is automatically calculated per region:
- Value added per employee;
- Compensation of employees per employee;
- Output per employee;
- Intermediate consumption divided by output;
- Revision of gross value added year t-3: final estimate minus provisional estimate.

Plausibility checks applied to this information:
- Is the regional distribution realistic?;
- Size of changes (year-on-year, absolute and relative) compared with changes of national totals;
- Can major (regional) economic events be recognised? (major strikes, break-out of swine fever, etc.);
- Size of the 'gap' between regional estimates and national total (only for the bottom-up method);
- Is the intermediate consumption – output ratio plausible?
- Is gross value added negative? This is only possible in very rare cases. Occurrence of negative figures for output and intermediate consumption is excluded.
- Is the operating surplus negative? This is not impossible but it should be judged.
- Size of deviations in above-mentioned ratios (compared with national accounts ratios, only for bottom-up or mixed methods);
- Consistency: e.g. does production increase while employment decreases;
- What causes big changes between provisional and final estimates?

Of course, the search for errors starts with the large discrepancies. At the Regional accounts team for instance, it is agreed that plausibility checks start with year-on-year changes of gross value added of more than 25 million euro and a deviation of more than 5 percent points (plus or minus) from the national development. Depending on the remaining time and the available capacity, smaller differences and deviations are subsequently examined.

Figures considered to be not plausible are examined more closely, on the '*explain or adjust*' principle. 'Smoothing' the figures without reason is absolutely out of the question. Economic reality can be volatile: large changes may occur - but they must be explained. In practice closer examination means a closer look at the micro-data. If errors are found, adjustments are made, the new estimates are processed, and of course, new confrontation tables and process tables are made. The adjustments are shown in a separate column of the process table. Corrections and explanations of correct (but unexpected) figures are laid down in so-called technical production reports, which, together with the final process tables and confrontation tables, form a documentation set. This documentation is very useful for answering questions about specific (unexpected) figures, and also turned out to be very useful during the compilation process one year later. Detailed documentation is also indispensable for continuity in the case of staff changes.

Metadata of the source statistics are essential to examine the regional accounts results. For the employment statistics, so-called explanation files are available. Major changes per industry and municipality of the number of jobs are checked by the department concerned. The changes that appeared to be correct (economic reality) are 'approved' and listed in separate files.

Other sources are the so-called production reports for the business statistics (SBS). For each industry, remarkable developments are explained. Unfortunately, the production reports only focus on national changes, changes per region are not taken into account. In some cases, individual companies are mentioned. This information is usually relevant for the regional accounts.

Explanations of deviating figures that turned out to be correct, mostly concern closures or removals of companies or establishments. Corrections are often connected with economic dynamics (mergers, divisions of companies, etc.) that are not recorded (or recorded later) in the sources. Because the national accounts, too, are to an important extent based on SBS data, information on major adjustments is communicated to the national accountants concerned. Often the reporting year of the national accounts has already 'closed' at that time. If so, these corrections cannot be incorporated in the national figures. The impact on the national figures is usually limited, but this is not the case for the regional accounts. While a company may have a national share within an industry of only a few percent, at a regional level this may easily be 20 or 30 percent. In spite of this, the regional accounts have to fit the national accounts figures exactly. In practice, this can lead to constraints.

Revision analysis

For seven years now, the revisions of the national figures on economic growth have been monitored systematically. In some years, the difference between the first (flash) estimate (after 45 days) and the final estimate (two and a half years after the reporting year) is more than one percent point. The revisions are analysed thoroughly every year. Several measures are now taken to reduce the amounts of the revisions.

For the regional accounts, it was assumed that the revisions were caused mainly by the national revisions. Revisions of the national economic growth figures are composed of revisions of growth rates by industry. If an industry is concentrated in a limited number of regions, this may lead to extremely large revisions of the regional economic growth figures. Further analysis showed that this was indeed the case, but on top of that, some revisions of regional figures were caused by changes in the regional sources. Especially when large companies are located in relatively small regions, this may cause major revisions.

For reporting year t-3, the regional accounts are based as much as possible on the structural business statistics. For reporting years t-2 and t-1, SBS data are not yet available. For year t-2, the change in the number of jobs per region is applied to some industries as a proxy for the change of gross value added. For some (capital-intensive) industries, the development of the number of jobs appeared not to be a valid indicator of the development of gross value added. In these cases, the national developments are applied to each region.

Until 2008, the regional economic growth rates of year t-1 were almost completely compiled based on the regional production structure of t-2 and the national growth rates per industry. However, data from the short term statistics (STS) are available on individual (large) companies. These monthly or quarterly data, for instance on turnover, can of course also be used for yearly estimates. For the first time, and on a very limited scale, data from the STS were used for the estimates of regional gross value added (and regional economic growth) in 2008. It is expected that this will diminish the size of the revisions caused by developments of large companies in relatively small regions.

4.2 Plans for further improvement

Improving estimates of provisional year figures

During the next production cycles of the regional accounts, the number of companies from which data of the STS are applied for the provisional year figures will be increased. Furthermore, the effectiveness of the variables used will be analysed. Using the development

of turnover as a proxy for the development of gross value added assumes a constant ratio between output and intermediate use. For some industries data on physical output are available (e.g. number of produced cars). Combined with price information, these figures could also be applied.

Regional labour market accounts

A pilot study is currently underway on regional labour market accounts at the NUTS2 level. The objectives of this pilot are:
▪ Satisfying user needs for regional labour data;
▪ Examining the quality of data on regional GVA;
▪ Exploring regional labour productivity data.

The Netherlands Bureau for Economic Policy Analysis (CPB) works with a model of the regional labour market. The model is used for forecasts on regional employment, unemployment, commuting, etc. Until now the CPB has filled the model partly with own estimates/calculations. One of the objectives of the pilot is to find out whether it is possible to estimate all the variables needed for the CPB model (and for other users).
In addition to the focus on labour data, the connection with the quality of regional GVA is obvious. Compensation of employees is closely related to employment and, on the other hand, is an important component of GVA. Combining regional labour data and regional GVA, results in regional labour productivity figures. The demand for figures on regional labour productivity has increased in the context of the Lisbon objectives in particular.

Redesign of the national accounts

Statistics Netherlands is currently carrying out a major project aimed at redesigning the national accounts. The project is to develop a new architecture for compiling national accounts which can cope with a number of problems to be faced now and in the future:
▪ More information from standardised registers and less information from dedicated surveys;
▪ Increasing problems related to observation and estimation of national economic phenomena in an internationalising world;
▪ Budget cutbacks, making necessary a more efficient and cost-effective system of compiling macro-economic data;
▪ Increasing call for statistics to become available in an early stage;
▪ Need for a more transparent and a better-documented system of compiling national accounts.

The project is embedded in a bureau-wide project, 'Redesigning the chain of economic statistics'. The aim of this project is to analyse the chain of economic statistics, from the General Business Register up to and including the national accounts estimates. This analysis closely investigates all links in the chain and their interrelationships.

Although the project 'Redesigning the national accounts' will certainly have an impact on the compilation of regional accounts, it is not yet clear what this impact will be. One advantage may be that complete data for small companies will become available from administrative sources. This may be a major improvement on using the results of non-regional stratified sample surveys. For large companies, a special production process will be set up which should lead to an improvement of the quality of the data of these companies. Of course, this is relevant for the regional accounts too. The exact consequences of these changes will become clear in the next few years.

Improving documentation of source statistics

A system of Service Level Agreements (SLAs) is used to structure cooperation between the national accounts department and the departments that collect and analyse the data. In the

coming years attempts will be made to change these SLAs to make them more suitable for the regional accounts. Information on individual companies in particular is needed.

ANNEX 1 – REGIONAL GVA COMPILATION TABLE

The compilation table is delivered in a separate file: NL_Compilation_Table.xls

Remarks concerning the regional GVA compilation table

The compilation table shows the national totals for 2001, just like the rest of the regional GVA inventory, but is based on the distribution of GVA in 2002. A regional GVA compilation table for the latter year was already compiled as part of a pilot in 2005. The proportions are considered to be equal for both years.

The mono-regional/multi-regional distribution is based on a subdivision of the NUTS3 level, at which GVA is compiled in the Netherlands.

For some subgroups, a small part of the GVA could not be labelled mono-regional or multi-regional; for example, when corrections were made to the source data. In these cases, GVA was distributed proportionally across mono-regional and multi-regional.

Output and intermediate consumption are not specified and only GVA is shown. In a few groups, a minor part of output and intermediate consumption are regionalised using different methods. However, this has only a marginal effect on the overall picture of GVA regionalisation.

Group A – 12000 Stockbreeding:
Intermediate consumption is calculated with an extrapolation. GVA for this group is only marginal (0.6 percent).

Group K – 70201 Exploitation of accommodation:
The GVA for both *Property leasing* and *Own-accommodation exploitation* are placed in column 12 because the calculations for the regional distribution (average rent * number of dwellings) were for a large part made with closely related indicators. Although the average rent per municipality was based on a model, the number of rented/owner-occupied dwellings was fairly accurate.

ANNEX 2 – LIST OF INDUSTRIES

A list of GVA per industry is presented in the file: NL_List of Industries_GVA.xls.

The industry codes in the list are internal codes of Statistics Netherlands. Regional GVA in the Netherlands is compiled at this level of detail.